

# HwDevComm.dll User Manual

## 1 Summarization

HwDevComm.dll with all Hanvon Attendance Machine (and other eligible "Hanvon time attendance machine communication protocol-HDCP\_V0.1.20060120" agreement (hereinafter referred to as: communications protocols) and time attendance devices) to communicate the dynamic link library (DYNAMIC LINK LIBRARY, referred to as DLL), it can be invoked in the Win32 platform.

## 2 Interface

HwDevComm.dll offer one interface externally, description as follow:

interface	significance
HwDev_Execute	execute all kinds command, such as administration, record.

the statement of the interface as follow:

```
Int HwDev_Execute( char * pDevInfoBuf, unsigned long nDevInfoLen,  
                  char * pSendBuf, unsigned long nSendLen,  
                  char ** pRecvBuf, unsigned long * pRecvLen,  
                  FuncTotalDoneTp pFuncTotalDone)
```

concrete parameter of the interface, return value and the significance as follow:

parameter	significance
pDevInfoBuf	Time Attendance Machine information in the first pointer; kept in line with "Hanvon attendance machine communication protocol-HDCP_V0.1.20060120" syntax described in attendance machine information. Attendance Machine Information Description of the form:  DeviceInfo( dev_id = "1" comm_type = "ip" ip_adress = "172.16.1.15" )
nDevInfoLen	Attendance-line information buffer length.

pSendBuf	The first pointer to send buffer; kept in line with "Hanvon attendance machine communication protocol-HDCP_V0.1.20060120" command in the syntax, parameters and data. Suggested that put a command in the a buffer every time. If put several commands in the buffer, it will be executed successfully. If one of the command execution fails, which will not affect the following implementation.
nSendLen	Send the buffer length. If nSendLen = 0 then HwDevComm.dll only received but dont send
pRecvBuf	The first pointer to receive buffer; store results of various commands;  The syntax of the implementation in line with "Hanvon attendance machine communication protocol-HDCP_V0.1.20060120";  HwDevComm.dll to apply and release the memory
pRecvLen	receive the length of the buffer
pFuncTotal Done	Callback function pointer; used to call those who progress in the implementation feedback; and PFuncTotalDoneTp type as : typedef int (CALLBACK FuncTotalDoneTp)( unsigned long nTotal, unsigned long nDone ).
<b>return value</b>	<b>significance</b>
0	successful
-1	failed
other	reserved

### 3 Communication Protocol Summarization

#### 3.1 Connect to the Attendance Machine

In two ways: serial, Socket.

Ready: The serial cable connect with PC and the attendance machine or network cable to connect PC, and attendance machine.

To establish serial port connection: Open the PC, serial port (serial port of attendance machine is turned on by default).

Remove serial connection: Close PC serial port.

Establish socket connection: set up PC Socket, Connect attendance machine (the state of attendance machine; default is Accept, monitor in the port 9922).

Remove socket Connection: close the PC-Socket.

## 3.2 Grammar and Reserved Word



chart 3.1

Reserved Word Name	Significance and Application
command word	This operation is used to indicate what to do (for example: GetEmployeeID means acquire all staff employees number from attendance machine).
control word	The word appears as a command parameter for specifying the parameters of what is (for example: name indicates that the parameter is the employee name).
Constants reserved words	The word appears as a command parameter, generally with the back of the control word to indicate that the value of the parameter is. (Eg: language = "chs" indicates that the attendance machine language set to Simplified Chinese).
Separator	separate each reserved word.

Chart 3.1

In addition to a separator, the other reserved words for the numbers underscore a combination of letters, up to 32 characters, case sensitive.

The reserved word can be inserted between the Space (spaces), Tab (tabs), CR (enter), treatment is negligible.

### 3.3 Principle of Reserved Words

Name of Reserved Words	Naming Principle
command word	Pascal nomenclature refers to one or more words together to form a name, every word beginning with capital letters, other letters are lowercase.
control word	Adopt "underlined lower-case" approach, have to use lowercase letters, between the words with "_" to separate. Eg: finger_count.
constant reserved word	Adopt "underlined lower-case" approach.

## 4 Reserved Words List and Significance

### 4.1 Command Word

Name	Significance
<b>Staff Administrator Command</b>	
GetEmployeeID	Get Employee ID
GetEmployee	Get the staff message from the machine. each time can only receive one.
SetEmployee	Send staff's message to the machine, each time can send one.
DeleteEmployee	Delete the staff and can delete more at a time.
DeleteAllEmployee	Delete all staff in the machine
SetNameTable	The Order updates the attendance of aircraft "id-name" comparison table, and then update the employee name that exist in the table.
<b>Record Administration Command</b>	

GetRecord	Get record from the machine in the special time range.
DeleteAllRecord	Delete all record in the machine.
<b>Attendance Administration Command</b>	
InitDevice	Attendance Machine initialized to a factory state.
InitDeviceAdmin	Attendance machine to initialize the administrator to set to a factory state.
GetDeviceInfo	Read attendance machine configuration, status information.
SetDeviceInfo	Setting attendance machine configuration, status information.
<b>Images Administration Command</b>	
GetPictureName	。 According to an image file time and picture recognition success of a list of image file names.
GetPicture	According to the image file name for image files. Image file is a base-64 encoded in Jpeg format photos.
<b>Result Command</b>	
Return	Return value identifies. Is a command performance results. such as:  <b>Return( result="success / failed" [ Ctrl_Word = "Parameter / Value" ] ... )</b>
Wait	Waiting for identification. Attendance machine execute the command, need to wait some time (the time by the control word wait_time specified in seconds) to return only after the results, the structure such as:  Wait (wait_time = "10") // This command indicated need to wait for 10 seconds  This command is used the following occasions:

	<p>An operation requires a longer time (for example: initialization attendance machine), then wait for the operation of the party by wait_time understand the need to wait a long time to receive the correct results.</p> <p>Generally speaking, if the implementation of the command can be started within 5 seconds to return results, then do not need to use the Wait command.</p>
	<p>Note: this Agreement, receive data by default wait time is 5 seconds. If a command does not return in 5 seconds, and did not use Wait wait time specified in the order, then timeout out.</p>

## 4.2 Control Word

name	significance												
description													
result	<p>Marked results of the implementation of a command, possible constant value are:</p> <table> <tr> <th>name</th><th>significance</th></tr> <tr> <td>success</td><td>success</td></tr> <tr> <td>failed</td><td>failed</td></tr> <tr> <td></td><td></td></tr> </table>	name	significance	success	success	failed	failed						
name	significance												
success	success												
failed	failed												
reason	<p>Interpretation of the information on the implementation of the results of the possible constant value are:</p> <table> <tr> <th>name</th><th>significance</th></tr> <tr> <td>unknown command</td><td>unknown command</td></tr> <tr> <td>bad parameter</td><td>bad parameter</td></tr> <tr> <td>device busy</td><td>device busy</td></tr> <tr> <td>employee overflow</td><td>As SetEmployee command, employee overflow</td></tr> <tr> <td>unknown id</td><td>As DeleteEmployee command, unknown id</td></tr> </table>	name	significance	unknown command	unknown command	bad parameter	bad parameter	device busy	device busy	employee overflow	As SetEmployee command, employee overflow	unknown id	As DeleteEmployee command, unknown id
name	significance												
unknown command	unknown command												
bad parameter	bad parameter												
device busy	device busy												
employee overflow	As SetEmployee command, employee overflow												
unknown id	As DeleteEmployee command, unknown id												
notify	<p>The results of the implementation of a reminder message, usually because the command does not recognize the parameters have caused the possible constant value are:</p> <table> <tr> <th>name</th><th>significance</th></tr> </table>	name	significance										
name	significance												

	unknown parameter	unknown parameter												
	Note that the implementation of the results must be based on result / reason / notify at the beginning, and must result / reason / notify such order.													
wait_time	The operation of equipment required to complete a specified waiting time, unit in seconds													
Public Constants														
Checkmodeconstants	Used to define control words such as attendance, or open the value of the constant value may be as follows: <table><tr><th>name</th><th>significance</th></tr><tr><td>fp</td><td>fingerprint</td></tr><tr><td>card</td><td>card</td></tr><tr><td>face</td><td>face</td></tr><tr><td>photo</td><td>photo</td></tr><tr><td>password</td><td>password</td></tr></table>		name	significance	fp	fingerprint	card	card	face	face	photo	photo	password	password
name	significance													
fp	fingerprint													
card	card													
face	face													
photo	photo													
password	password													
Logical constants	Inspection methods used to combine multiple constants, the constant value may be as follows: <table><tr><th>name</th><th>significance</th></tr><tr><td>&amp;</td><td>&amp;</td></tr><tr><td> </td><td> </td></tr></table>		name	significance	&	&								
name	significance													
&	&													
description of employee information														
id	id													
cacu_id	ID Calculated according to some rules of the ID													
name	name													
cardcode	card code													

finger_count	the number fingerprint of the staff										
finger_data	Fingerprint data, the value of base-64 encoded binary data.										
face_data	Facial feature data, the value of base-64 encoded binary data.										
privilege	<p>The employee's permission, the possible constant value are:</p> <table> <tr> <th>name</th><th>significance</th></tr> <tr> <td>prvg_none</td><td>unlimited</td></tr> <tr> <td>prvg_user</td><td>Normal user</td></tr> <tr> <td>prvg_admin</td><td>Normal administrator</td></tr> <tr> <td>prvg_adv_admin</td><td>advanced administrator</td></tr> </table>	name	significance	prvg_none	unlimited	prvg_user	Normal user	prvg_admin	Normal administrator	prvg_adv_admin	advanced administrator
name	significance										
prvg_none	unlimited										
prvg_user	Normal user										
prvg_admin	Normal administrator										
prvg_adv_admin	advanced administrator										
check_type	<p>Check type, a possible way to check a constant constant value.</p> <p>The logical constants can be used side by side with the number of constants that the employee have more than one authority. For example: check_type="fp &amp; card &amp; face".</p>										
opendoor_type	<p>Open door type, a possible way to check a constant constant value.</p> <p>The logical constants can be used side by side with the number of constants that the employee have more than one authority.</p> <p>For example: opendoor_type="fp   card".</p>										
permit_photo	<p>This is to keep compatible with V0.1 protocol, and specifically refers to attendance mode.</p> <p>Whether there is camera access, possible constant value are:</p> <table> <tr> <th>name</th><th>significance</th></tr> <tr> <td>true</td><td>true</td></tr> <tr> <td>false</td><td>false</td></tr> </table>	name	significance	true	true	false	false				
name	significance										
true	true										
false	false										
permit_password	<p>This is to keep compatible with V0.1 protocol, and specifically refers to attendance mode.</p> <p>Are there passwords attendance privileges, possible constant value are:</p> <table> <tr> <th>name</th><th>significance</th></tr> <tr> <td>true</td><td>true</td></tr> <tr> <td>false</td><td>false</td></tr> </table>	name	significance	true	true	false	false				
name	significance										
true	true										
false	false										
password	If you have password access attendance, then the item corresponds to their										



	passwords.																
on the description of attendance record information																	
time	time: yyyy-mm-dd hh:mm:ss.																
type	Attendance way, a possible way to check a constant constant value.																
card_type	<p>Card-point source generated by the possible constant value are:</p> <table border="1"> <thead> <tr> <th>name</th><th>significance</th></tr> </thead> <tbody> <tr> <td>cardtype_normal</td><td>Normal card</td></tr> <tr> <td>cardtype_on</td><td>on</td></tr> <tr> <td>cardtype_off</td><td>off</td></tr> <tr> <td>cardtype_addon</td><td>addon</td></tr> <tr> <td>cardtype_addoff</td><td>addoff</td></tr> <tr> <td>cardtype_out</td><td>out</td></tr> <tr> <td>cardtype_back</td><td>back</td></tr> </tbody> </table>	name	significance	cardtype_normal	Normal card	cardtype_on	on	cardtype_off	off	cardtype_addon	addon	cardtype_addoff	addoff	cardtype_out	out	cardtype_back	back
name	significance																
cardtype_normal	Normal card																
cardtype_on	on																
cardtype_off	off																
cardtype_addon	addon																
cardtype_addoff	addoff																
cardtype_out	out																
cardtype_back	back																
card_src	<p>Card-point source generated by the possible constant value are:</p> <table border="1"> <thead> <tr> <th>name</th><th>significance</th></tr> </thead> <tbody> <tr> <td>from_check</td><td>from attendance machine</td></tr> <tr> <td>from_door</td><td>From access control machine</td></tr> </tbody> </table>	name	significance	from_check	from attendance machine	from_door	From access control machine										
name	significance																
from_check	from attendance machine																
from_door	From access control machine																
photo	Attendance for the camera mode, the control word is followed by a base-64 encoded Jpeg format photos.																
on the description of attendance machine configuration information																	
dev_type	<p>types of attendance equipment:</p> <table border="1"> <thead> <tr> <th>name</th><th>significance</th></tr> </thead> <tbody> <tr> <td>enroll</td><td>attendance machine</td></tr> </tbody> </table>	name	significance	enroll	attendance machine												
name	significance																
enroll	attendance machine																

	door	access control
time	Attention machine's time	
week	week should be: 1~7 .  1: Sunday 2: Monday... 7: Saturday	
language	language of the attendance machine, the possible constant value are:	
	name	significance
	chs	simple chinese
	cht	traditional chinese
	enu	American English
	jpn	Japanese
	kor	Korean
volume	as the volume size of attendance Machine,the possible constant value are:	
	name	significance
	low	low
	mid	mid
	high	high
employee_total	employee_total	
employee_max	employee_max	
record_total	record_total	
record_max	record_max	
finger_algorithm	finger_algorithm	
finger_captor	finger_captor	
soft_version	soft_version	
memory_alarm	memory_alarm 1% ~ 99%。	
door	Access control settings, the possible constant value are:	
	name	significance
	wiegand26	wiegand26
	wiegand34	wiegand34
	wiegand27	wiegand W27(Hanvon standard controller )

	op	swich signal	
other control message			
total	Total. Usually a time when there are multiple results returned for marking the number of results returned. The word must be reserved in his description appears before a number of results returned, or they will be ignored.		
start_time	starting time: yyyy-mm-dd hh:mm:ss.		
end_time	finished time: yyyy-mm-dd hh:mm:ss.		
overwrite	Whether the coverage of possible constant value are:		
	name	Significance	
	true	true	
	false	false	

## 5 Detailed Annotation of Command

### 5.1 Staff Administration Command

Command	GetEmployeeID()
successful Reply	Return(result="success" total="100" id="11" id="109" ...).
Failed reply	Return(result="failed").

Command	GetEmployee(id="120")
successful Reply	Return(result="success" id="120" name="John" finger_count="2" finger_algorithm="0.0.1" finger_captor="0.0.3"                      finger_data="ADFASERQERERTYSDFGHSDFGADSF..." finger_data="HASRTTYHRTAEFASDFQEQAf..."(base-64 encode) permit_photo="true").
Failed reply	Return(result="failed" reason="unknown id").

Attention	each time just can get one id.
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<b>Command</b>	SetEmployee(id="1009" name="John" finger_count="1" finger_algorithm="0.0.1" finger_captor="1.0.2"                      finger_data="AGQWERASDFASERQWERAS..." permit_photo="false" overwrite="true/false")
successful Reply	Return(result="success").
Failed reply	Return(result="failed" reason="employee overflow").

<b>Command</b>	<b>DeleteEmployee(id="100")</b>
successful Reply	Return(result="success").
Failed reply	Return(result="failed" reason="unknown id").

<b>Command</b>	<b>SetNameTable(120="John" 88="Emily" 192="Jack" 1290="Tony" ...)</b>
successful Reply	Return(result="success").
Failed reply	Return(result="failed").
Attention	This command renew the comparision table "id-name", then renew the workers <sub>i</sub> name who exist in the table. Comparision table will renew by the way of covering , if you just want to change individual worker <sub>i</sub> s name, please use the command SetEmployee(id="1009" name="John").

## 5.2 Record Administration Command

<b>Command</b>	<b>GetRecord(start_time="2005-11-1 0:0:0"</b>
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	<b>end_time="2005-11-30 24:00:00")</b>
successful Reply	Return(result="success" total="100" dev_id="1" time="2006-1-10 17:40:06" type="fp" id="120" name="John" time="2006-1-10 18:00:10" type="fp" id="160" name="Emily" time="2006-1-10 18:03:28" type="photo" id="219" name="Jack" photo="SDFQWERASDFAESRASDF...").
Failed reply	Return(result="failed").
Attention	Don't have start_time mean read all record before end_time;
	Don't have end_time mean read all record after start_time;
	Don't have word show read all record
	start_time <= effective time slice<= end_time.
	When receive record take the control word jtimej as the marked compart each record.

<b>Command</b>	<b>DeleteAllRecord()</b>
successful Reply	Return(result="success").
Failed reply	Return(result="failed").

### 5.3 Attendance Machine Administration Command

<b>Command</b>	<b>InitDevice()</b>
successful Reply	Return(result="success").
Failed reply	Return(result="failed").

<b>Command</b>	<b>InitDeviceAdmin()</b>
successful Reply	Return(result="success").
Failed reply	Return(result="failed").

<b>Command</b>	<b>SetDeviceInfo(time="2006-1-16 12:39:40"</b> <b>memory_alarm="90%"</b> <b>language="chs"</b> <b>volume="low/mid/high")</b>
successful Reply	Return(result="success")。
Failed reply	Return(result="failed")。

<b>Command</b>	<b>GetDeviceInfo()</b>
successful Reply	Return(result="success" dev_id="1" time="2006-1-10 10:12:20" language="chs" volume="low" stuff_total="140" stuff_max="500" record_total="1200" record_max="50000" finger_algorithm="0.0.1" finger_captor="0.0.3" soft_version="1.0.0")。
Failed reply	Return(result="failed")。

## 5.4 Image Administration Command

<b>Command</b>	<b>GetPictureName(time="2005-11-1 0:0:0"</b> <b>type="face/ photo / card ")</b>
successful Reply	Return(result="success" total="100" /*not essential*/ name="1.jpg" name="2.jpg" name="abc.jpg" ... )
Failed reply	Return(result="failed" reason=" bad parameter")。
Attention	These constants correspond to: the photos of: storage identification adopted;

	recognition but not passed; punch the card and the face detection.
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command	GetPicture(name="name of the received image")
successful Reply	Return(result="success" photo="SDFQWERASDFAESRASDF..." )。
Failed reply	Return(result="failed")。
Attention	