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| **SIMPLWINDOWS NAME:** | Tandberg 2500/6000 Full Control |
| **CATEGORY:** | Conferencing |
| **VERSION:** | 1.0 |
| **SUMMARY:** | Control all standard videoconference functions |
| **GENERAL NOTES:** | This module will provide full control of all standard videoconference functions on Tandberg 2500 and 6000 codecs. Since certain features are not available on all codec models, some functions included on this module may not function on the model you are using. All functions were tested and verified functional on a Tandberg 6000 codec with version B3.3 software loaded. All feedback provided by this module is true feedback as provided by the Tandberg system. |

Before performing any other functions, you should pulse the Initialize input. This will setup the Tandberg to provide the proper feedback to the Crestron system, and will poll for the current status of all settings. The initialization process will take approximately three seconds. The Initialize_Busy output will be high while the initialization is in progress. If no valid responses are received from the codec, the No_Communications output will be pulsed for one second. The initialization process should only need to be done once after the codec has been powered on.

1. This module has been divided into sections based on categories of control. The categories are:
2. Camera control
3. Video/audio switching
4. Miscellaneous control (PIP, Volume, etc.)
5. Manual dialing control
6. Directory dialing controls
7. Duo video controls
8. Multipoint controls
9. Paramater setup controls
10. Directory setup controls
11. IR emulation functions
12. Full keyboard used for entering all information
13. System status

For camera control, you must first select the near or far end camera for control. Then the camera movement and preset buttons will act on the near or far end camera currently selected for transmission. Note that focus controls are not available for the near end camera. Also note that you do not have the ability to store presets on the far end system. To store a preset on the near end system, press and hold the desired preset button for 2 seconds. The Preset_Saved output will pulse, and the preset will be saved.

For video/audio switching, you have the ability to select any near end video source for transmission. You also have the ability to turn on/off any of the near end audio inputs. For far end control, you can select any of the far end video sources to be transmitted live, and you can select any far end source to be sent as a still image.

For manual dialing control, you have the ability to select from any of the available call qualities discretly, or you can use the Dial_Call_Quality_Up/Down inputs to scroll through the available qualities. You can also make the call restricted. You have the ability to enter either one or two numbers for the call. The actual numbers to be dialed should be entered using the Keyboard_* inputs toward the bottom of this module. Since you can

dial both numeric and alphanumeric IP addresses, a full keyboard has been implemented. See the demo program for an example this works.

For Directory dialing, you have the ability to dial any of the entries that have been entered into the Tandberg local and global directories. The local directory can contain up to 99 entries, and the global directory can contain up to 199 entries. When you pulse the Request_Directory input, the Crestron system will read both directories and store them in the Crestron system. While the read is in progress, the Request_Directory_In_Progress output will be high, and the Request_Directory_Progress output could be routed to a bargraph on a touch panel to show the relative progress. After the directory has been read, it will be automatically sorted alphabetically. The Sort_In_Progress output will be high while sorting is in progress.

After reading and sorting the directory, you can now display the directory on screens containing up to twenty entries per page. You can use the Directory_First/Prev/Next/Last inputs to scroll between pages. Use the Directory Entries Per Screen <21D to enter the number of entries to be displayed per screen. To display twenty entries per screen, enter 20D.

When you press one of the entries using the Directory_* inputs, the current settings for that entry will be shown at the Directory_Name$, Directory_Number1$, Directory_Number2$, and Dial_Call_Quality$ outputs. To dial the last entry selected, pulse the Directory_Dial input.

The duo video functions control the duo video feature of the codec. This feature allows two simultaneous live sources to be sent to the far end. Whichever duo video source you select will be simultaneously sent to the far end where it will be shown on the Dual output of the Tandberg. It can only be used for dual monitor systems. Once activated, the duo video can be canceled by pulsing the Duo_Video_Off input.

The multipoint controls allow control of both external bridge multipoint calls, as well as the use of the multisite feature of the Tandberg system. Pulsing the MCU_Request_Type input will cause the Tandberg system to send us the multipoint status of the codec. Based on what type of multipoint call is in progress, different multipoint controls should be displayed on the touch panel. See the demo program for an example of which functions are valid for each mode.

This module will provide a list of up to 50 mutipoint sites involved in a conference, displayed on screens of up to 10 sites per screen. Set up the number of sites per screen using the MCU_Entries_Per_Screen <11D paramater. To display 9 entries per screen, enter 9D. You can scroll through the screens using the MCU_Screen_First/Previous/Next/Last inputs. For each site, there will be a corresponding site name (MCU_Site_Name_*$), MCU Number (MCU_Number_*$), and MCU Site Number (MCU_Site_Number_*$).

In a multipoint bridge conference, you can choose to request to be chairman. If you are granted the chairmanship, you can then choose to View a site, transmit a site to all other sites, or drop a site from the

conference. You can also request the floor, such that your site is transmitted to all other sites.

In a Tandberg hosted multisite call, if your site is holding the conference (with up to three other sites connected), you can choose to have a voice-switched or continuous presence conference. You can request the floor in any of the sites in a Tandberg hosted multisite conference.

The MCU_Status$ output will indicate the name of the site which you are currently viewing. The MCU_State_Onair_On output will be high when your site is being transmitted to another site.

The Directory edit functions allow you to modify the Tandberg local dialing directory. You cannot modify entries made in the Tandberg global directory. Display and select the directory as was done for your directory dialing page. The Global_Directory_Selected, and Local_Directory_Selected outputs will indicate if the entry selected was in the global or local directory. If it is in the local directory, you can display the settings currently stored, and allow them to be modified. To modify a setting, first select the paramater to be changed using the Directory_Edit_Name/Number1/Number2 inputs. Then use the Keyboard_* inputs at the bottom of this module to change the current settings. When finished, pulse the Directory_Edit_Save_Entry input. You could also choose to delete the last entry selected, or to add a new entry. After making any of these changes, the directory will automatically be resorted. The Local_Directory_Entries_Free output will indicate how many (out of 99 total) entries are available.

The IR_* functions will directly emulate the functions available on the Tandberg IR remote.

The Keyboard functions give full implementation of a computer style keyboard, including the shift and caps lock features. Separate sections are provided for the alphabetic portion and the numeric portion. This keyboard will be used for entering all phone numbers, IP addresses, directory names, etc. Based on what field you had selected for editing (Number 1, Number 2, directory name, etc.) text you typed will be directed into that field.

Status outputs are provided for a number of paramaters. These include the names of the near and far end sources. The type of Tandberg system being used. The LAN and ISDN bandwidth available. Individual call status for each of the 4 channels. A consolidated Call_Status$ output which will contain messages for all 4 lines. Digital outputs indicating when each of the 4 lines is connected, and an Incoming_Call indicator which will pulse when an incoming call is detected when auto andswer is off.

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| **CRESTRON HARDWARE:** | ST-COM, CNXCOM, C2-COM |
| **SETUP OF CRESTRON HARDWARE:** | **For RS232:** Baud Rate - 9600 Parity - None Data Bits - 8 Stop Bits - 1 |
| | **For TCP/IP:** |

Use port #23D on the TCP/IP Client

**VENDOR FIRMWARE:** Tested with Software version B3.3

**VENDOR SETUP:** Use Data Port 1 to communicate with the Crestron system. The Tandberg codec should have data port 1 set to "control mode"

**CABLE NUMBER:** CNSP-121

## CONTROL:

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| **Initialize** | D | Pulse to set up the Tandberg for proper communications with the Crestron system. Initialize_Busy will be high while this is in progress |
| **Camera_Near_End** | D | Pulse to select the currently active near end camera for control |
| **Camera_Far_End** | D | Pulse to select the currently active far end camera for control |
| **Camera_Up/Dn/Lt/Rt** | D | Press and hold to pan/tilt the bear or far end camera |
| **Camera_Zoom_In/Out** | D | Press and hold to zoom the near or far end camera in/out |
| **Camera_Focus_In/Out** | D | Press and hold to focus the far end camera only |
| **Camera_Preset_0-14** | D | Pulse to select any of the 15 available presets to be recalled. Press and hold for 2 seconds to store the current camera position into the selected preset. Only near end presets can be stored. |
| **Camera_Home** | D | Pulse to send the near end camera to the home position |
| **Video_Input_1-5** | D | Pulse to select the near end video source for transmission |
| **Audio_Input_*_On/Off/Tog** | D | Pulse to turn on/off each of the near end audio sources |
| **Send_Still_Current** | D | Pulse to send a still image of the currently transmitted live source |
| **Send_Still_Input_*** | D | Pulse to send a still image of any of the available near end sources |
| **View_Still_On/Off** | D | Pulse to turn the still image view on/off |
| **Receive_Input_*** | D | Pulse to select any of the far end video sources for transmission |
| **Receive_Still_Input_*** | D | Pulse to receive a still image from any of the far end sources |
| **PIP_On/Off/Tog** | D | Pulse to turn the picture-in-picture on/off |
| **Privacy_On/Off/Tog** | D | Pulse to turn privacy (near end mic mute) on/off |
| **Volume_Up/Down** | D | Press and hold to ramp the near end receive volume up/down |
| **Volume_Mute_On/Off/Tog** | D | Pulse to mute/unmute te near end receive volume |
| **Filter_On/Off/Tog** | D | Pulse to turn the filter on/off |
| **Speaker_On/Off/Tog** | D | Pulse to turn the speaker on/off |
| **Selfview_On/Off/Tog** | D | Pulse to turn the selfview on/off |

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| | | for single monitor systems |
| Video_Quality_* | D | Pusle to select the type of video quality |
| Do_Not_Disturb_On/Off/Tog | D | Pulse to activate do-not-disturb. When active, incoming calls will be ignored |
| Multisite_Receive_On/Off/Tog | D | Pulse to activate/deactivate multisite receive. When deactivated incoming multisite calls will be ignored |
| Stream_On/Off/Tog | D | Pulse to start/stop streaming video to an external IP address |
| Dial_Call_Quality_* | D | Pulse to select the desired quality for a call. selecting auto will cause the codec to automatically negotiate the best quality possible |
| Dial_Call_Restricted_On/Off/Tog | D | Pulse to make the call restricted/non-restricted |
| Dial_Call_Quality_Up/Down | D | Pulse to cycle through the available call qualities |
| Dial_Call_Select_Number_1-2 | D | Pulse to select number 1 or 2 for entry |
| Dial_Call_Dial | D | Pulse to dial the call |
| Dial_Call_Redial | D | Pulse to redial the last call placed |
| Dial_Call_Hang_Up_All | D | Pulse to hang up all active calls |
| Dial_Call_Hang_Up_1-4 | D | Pulse to individually hang up each of the 4 lines |
| Request_Directory | D | Pulse to read the local and global directories from the Tandberg system. Request_Directory_In_Progress will be high while the directory is being read |
| Sort_Directory | D | Pulse to sort the directory. Sort_Directory_In_Progress will be high while sorting |
| Directory_First | D | Pulse to display the first page of directory entries |
| Directory_Previous | D | Pulse to display the previous page of directory entries |
| Directory_Next | D | Pulse to display the next page of directory entries |
| Directory_Last | D | Pulse to display the last page of directory entries |
| Directory_1-20 | D | Pulse to select any of the entries currently being displayed |
| Directory_Dial | D | Pulse to dial the last entry selected |
| Duo_Video_On/Off | D | Pulse to activate/deactivate duo video |
| Duo_Video_Source_1-5 | D | Pulse to select the source to be sent as duo video. This will also automatically turn duo video on. |
| Duo_Video_Source_Swap | D | Pulse to swap the two sources currently being sent |
| MCU_Request_Type | D | Pulse to request the current MCU status |
| MCU_Screen_First | D | Pulse to display the first screen of mcu sites |
| MCU_Screen_Previous | D | Pulse to display the previous screen of mcu sites |

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| **MCU_Screen_Next** | D | Pulse to display the next screen of mcu sites |
| **MCU_Screen_Last** | D | Pulse to display the last screen of mcu sites |
| **MCU_View_Site_1-10** | D | Pulse to select to view any of the mcu sites currently displayed. Only available if you are the chairman |
| **MCU_Transmit_Site_1-10** | D | Pulse to select to transmit any of the mcu sites currently displayed. Only available if you are the chairman |
| **MCU_Drop_Site_1-10** | D | Pulse to drop any of the mcu sites currently displayed. Only available if you are the chairman. |
| **MCU_Request_Floor** | D | Pulse to request your site to be the floor (to be seen by all other sites) |
| **MCU_Continuous_Presence** | D | Pulse to select the conference to be continuous presence |
| **MCU_Voice_Switched** | D | Pulse to selec the conference to be voice switched |
| **MCU_Request_Chair** | D | Pulse to request to be chairman |
| **MCU_End_View** | D | Pulse to end viewing the last site that was selected for viewing |
| **Snapshot_Source_*** | D | Allows you to set which source will be the default source for snapshots |
| **Presentation_Mode_*** | D | Allows you to select which presentation mode to use |
| **Auto_Answer_On/Off** | D | Allows auto-answer to be activated/deactivated |
| **Auto_PIP_On/Off** | D | Allows auto-pip to be activated/deactivated |
| **Auto_Still_On/Off** | D | Allows auto still to be activated/deactivated |
| **Monitors_1/2** | D | Allows you to select your system to be single or dual monitors |
| **Screen_Saver_Enable/Disable** | D | Allows you to enable or disable the Tandberg screensaver |
| **Screen_Saver_On/Off** | D | Allows you to immediately turn the screensaver on/off |
| **Vol_Up/Down/Mute_In_1-6/Out_1-3** | D | Allows you to adjust the levels of any of the audio inputs or outputs |
| **Directory_Edit_Name** | D | Selects the name field for editing |
| **Directory_Edit_Number_1-2** | D | Selects number 1 or 2 for editing |
| **Directory_Edit_Delete_Entry** | D | When pulsed, will delete the last entry selected |
| **Directory_Edit_Save_Entry** | D | When pulsed will save the edited fields into the last directory entry selected. |
| **Directory_Edit_Add_Local_Entry** | D | When pulsed, will add the edited fields as a new entry in the directory |
| **Directory_Edit_Clear_Settings** | D | When pulsed will clear the name/number1/number2 fields so a new entry can be entered. |
| **IR_*** | D | Directly emulates all functions available on the Tandberg Infrared remote control |
| | | Pulse to clear the previously |

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| **Keyboard_Clear** | D | entered text |
| **Keyboard_Shift** | D | Pulse to activate the shift function. The next keyboard character entered will be shifted, and the shift will be automatically cleared. |
| **Keyboard_Caps_Lock** | D | Pulse to activate/deactivate the caps lock feature. This will only have an effect on the alphabetic keys |
| **Keyboard_\*** | D | Includes all standard computer keyboard functions |
| **Numeric_Keypad_\*** | D | Contains the keys included in the numeric keypad portion of a computer keyboard |
| **From_Device$** | S | Serial signal to be routed to a 2-way RS232 port |

## FEEDBACK:

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| **Initialize_Busy** | D | High while the initialization is in progress (about 3 seconds) |
| **No_Communications** | D | Pulses for 1 second if proper communications are not established during initialization |
| **Near/Far_End_Camera_Fb** | D | Indicates which camera has been selected for control |
| **Camera_Preset_\*_Fb** | D | Indicates the last preset saved/recalled |
| **Camera_Preset_Saved** | D | Pulses when a preset has been saved |
| **Video_Input_\*_Fb** | D | Indicates which video source is currently selected for transmission |
| **Audio_Input_\*_Fb** | D | Indicates which audio sources are currently on/off |
| **View_Still_On/Off_Fb** | D | Indicates if view still is on or off |
| **Receive_Input_\*_Fb** | D | Indicates which far end source is currently being transmitted |
| **PIP_On_Fb** | D | Indicates if the picture-in-picture is on |
| **Privacy_On_Fb** | D | Indicates if privacy is active |
| **Volume_Level** | D | Indicates the current receive volume level for display on a bargraph |
| **Volume_Mute_Fb** | D | Indicates if the receive volume is muted |
| **Filter_On_Fb** | D | Indicates if the filter is on |
| **Speaker_On_Fb** | D | Indicates if the speaker is on |
| **Selfview_On_Fb** | D | Indicates if selfview is on |
| **Video_Quality_\*_Fb** | D | Indicates which video quality has been selected |
| **Do_Not_Disturb_On/Off_Fb** | D | Indicates if do-not-disturb is active |
| **Multisite_Receive_On/Off_Fb** | D | Indicates if multisite receive is active |
| **Stream_On/Off_Fb** | D | Indicates if video streaming is active |
| **Dial_Call_Quality_\*_Fb** | S | Indicates which call quality has been selected |
| **Dial_Call_restricted_\*_Fb** | D | Indicates if restricted has been |

|  |  | selected for the call |
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| Dial_Call_Quality$ | S | Text indicating which call quality has been selected |
| Dial_Call_Select_Number_1/2_Fb | D | Indicates which number has been selected for entry |
| Dial_Call_Number_1/2$ | A | Text displaying the numbers as they are entered |
| Request_Directory_In_Progress | D | High while the Tandberg directory is being read |
| Request_Directory_Progress | A | Progress bar while the Tandberg directory is being read. Could be routed to a bargraph on a touch panel |
| Sort_Directory_In_Progress | D | High while the directory is being sorted |
| Directory_1-20$ | S | Indicates the name of up to 20 directory entries per page |
| Directory_Name$ | S | Indicates the name of last directory entry selected |
| Directory_Number1/2$ | S | Indicates the two numbers stored with the last entry selected |
| Directory_Network$ | S | Indicates the network type stored with the last entry selected |
| Duo_Video_On/Off_Fb | D | Indicates if Duo video is active or inactive |
| Duo_Video_Source_Fb | D | Indicates which source is the current duo video source |
| MCU_State_Off_Fb | D | Indicates that no mcu call is currently in progress |
| MCU_State_Multisite_*_Fb | D | Indicates that no mcu call is currently in progress |
| MCU_State_Chair_Supported_Fb | D | Indicates which type of mcu call is in progress |
| MCU_StatuS$ | S | Indicates that chairman is supported in the current mcu call |
| MCU_Site_Name_1-10$ | S | Shows the name of up to 10 sites involved in the conference |
| MCU_Number_1-10$ | S | Shows the mcu number of up to 10 sites involved in the conference |
| MCU_Site_Number_1-10$ | S | Shows the site number of up to 10 sites involved in the conference |
| MCU_State_Onair_On_Fb | D | High when the local sites video is being viewed by another site |
| MCU_State_Continuous_Presence_Fb | D | High if a continuous presence conference is in progress |
| MCU_State_Voice_Switched_Fb | D | High if a voice switched conference is in progress |
| MCU_State_Chair_Granted_Fb | D | High if the chairmanship has been granted to the near end site |
| Snapshot_Source_*_Fb | D | Indicates which source has been selected for the default snapshot source |
| Presentation_Mode_*_Fb | D | Indicates which presentation mode has been selected |
| Auto_Answer_On/Off_Fb | D | Indicates if auto answer is on/off |
| Auto_PIP_On/Off_Fb | D | Indicates if auto pip is on/off |
| Auto_Still_On/Off_Fb | D | Indicates if auto still is on/off |
| Monitors_1/2_Fb | D | Indicates if the system is set up for single or dual monitors |

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| **Screensaver_Enable/disable_Fb** | D | Indicates if the screensaver is currently enabled or disabled |
| **Screensaver_On/Off_Fb** | D | Indicates if the screensaver is currently on or off |
| **Vol_In/Out_1-6_Level** | A | Indicates the levels of each of the 6 audio inputs and 3 audio outputs. Can be routed to bargraphs on a touch panel |
| **Vol_Mute_In/Out_1-6_Fb** | D | Indicates if mute is active for any of the audio inputs/outputs |
| **Directory_Edit_Name_Fb** | D | High if the directory name field has been selected for editing |
| **Directory_Edit_Number_1/2_fb** | D | High if the directory number 1 or 2 field has been selected for editing |
| **Local_Directory_Entries_Free** | A | Indicates the number of entries free in the directory |
| **Global_Directory_Selected** | D | High if the last entry selectd was from the global directory |
| **Local_Directory_Selected** | D | High if the last entry selected was from the local directory |
| **Keyboard_Shift_Fb** | D | High while the shift feature is active |
| **Keyboard_Caps_Lock_Fb** | D | High while the caps lock feature is active |
| **Near_Source_1-5$** | S | Indicates the name of the near end video sources as read from the Tandberg system |
| **Far_Source_1-5$** | S | Indicates the name of the far end sources as read from the Tandberg system |
| **System_Type_800/2500/6000** | D | Indicates if the codec connected to the Crestron system is a Tandberg 2500 or 6000 |
| **ISDN_Bandwidth** | A | Indicates the available ISDN bandwidth set up on the Tandberg system |
| **LAN_Bandwidth** | A | Indicates the available LAN bandwidth set up on the Tandberg system |
| **Natural_Presentation_Available** | D | Indicates that the Tandberg Natural Presentation Package has been installed on the system |
| **MCU_Available** | D | Indicates that the Tandberg MCU option has been installed on the system |
| **Call_Status$** | S | Displays any call status messages received for all 4 lines |
| **Call_Status_Channel_*_Direction$** | S | Indicates the direction of the call individually for each of the 4 lines |
| **Call_Status_Channel_*_type$** | S | Indicates the type of the call individually for each of the 4 lines |
| **Call_Status_Channel_*_Status$** | S | Indicates the status of the call individually for each of the 4 lines |
| **Line_1-4_Connected** | D | High if the corresponding line is connected |
| **Incoming_Call** | D | Pulses high when an incoming call is received if auto answer is off |
| **To_Device$** | S | Serial signal to be routed to a 2-way RS232 port |

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| **OPS USED FOR TESTING:** | CNMSX = 5.12.57x.upz<br>Pro2 = v1.002 |
| **COMPILER USED FOR TESTING:** | SimplWindows Version 2.00.21 |
| **SAMPLE PROGRAM:** | Tandberg 800+2500+6000 Pro2 Demo Program<br>Tandberg 800+2500+6000 CNMSX Demo Program |
| **REVISION HISTORY:** | None |