

# 3M™ Digital Wall Display 9000 Plus Series

## Technical Bulletin #8

Revised: 7/9/08

### July/2008 – Command Line Interface for the 3M™ Digital Wall Display DCB Software DP Ver. 2.3.

#### Revision History

This document has been updated with new information for the 3M DCB Software DP Ver. 2.3.

<i>Date</i>	<i>Description</i>
Sept 06	Original bulletin applies to DCB Software DP Ver. 2.1 and Ver. 2.2
April 08	Revised for DCB Software DP Ver. 2.3. Changes include: <ul style="list-style-type: none"><li>• Added <b>WPK</b> command to the Video Settings section.</li><li>• Added <b>WEBC</b> command to Controller Commands section.</li><li>• Added "<b>Control by Ethernet</b>" and "<b>Troubleshooting with Control by Ethernet</b>" sections.</li><li>• Many commands are no longer "Ignored" when the lamp is off.</li><li>• Corrected or improved the descriptions of many commands.</li></ul>

#### Background

This bulletin provides information for the 3M™ Digital Wall Display *Plus* DCB Software Version DP 2.3 Command Line Interface (CLI) codes. It includes the following information:

- RS232 Interface including Cabling and Configuration.
- User commands grouped by function.
- Controller commands.
- Converting a controller application from DP ver 1.x to DP ver 2.0 commands.
- Converting a controller application from a Model 9000 to a Model 9000 Plus series unit.
- Ethernet Interface and HTTP URL.

The CLI provides an alternate way for controlling the 3M™ Digital Wall Display. A computer or other control device can be programmed to control the 3M Digital Wall Display and request status information. All actions that can be done using the remote control and the on-screen menu can be done using the CLI. The CLI is sometimes used interactively by the end-user when requested by the Technical Assistance Center to gather diagnostic information when the unit will not display anything including the menu.

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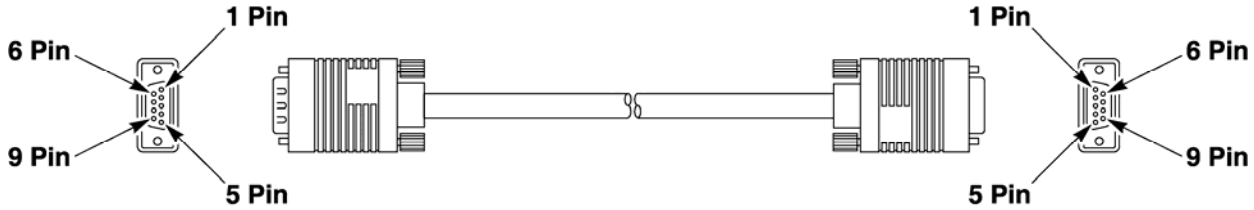
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## Signal Assignment

The 3M Digital Wall Display control port is labeled RS-232. The control port uses a female 9-pin D-Sub connector. Below is the control port pin and connector pin assignments.



Pin	Signal	Description
1	DCD	Data Carrier Detect
2	TX	Data Transmit
3	RX	Data Receive
4	DSR	Data Set Ready
5	GND	Ground
6	DTR	Data Terminal Ready
7	CTS	Clear to Send
8	RTS	Ready to Send
9	RI	Ring In

**Cable Output Pin Assignments**

## RS232 Communication Configuration

The CLI RS232 serial configuration is:

- Baud - 9600
- Data bits - 8
- Parity - none
- Stop bits - 1
- Flow control - HW

## Sending Commands (DCB Software DP Version 2.3)

After power-up and after each command is processed, the CLI indicates it is ready to accept a command by issuing the prompt character: > (ASCII code 62). Commands can be entered in upper or lower case; however, they will always be echoed in upper case. Commands must be followed by a carriage return (ASCII code 13). If a command has one or more parameters, the command and every parameter must be separated by the space character (ASCII code 32). Otherwise the 3M™ Digital Wall Display will display either the “Invalid Command” or “Invalid Parameter” error message.

Almost every command has a response that always ends with the 3 characters, carriage return (CR, ASCII code 13), line feed (LF, ASCII code 10), and the prompt (>, ASCII code 62). For commands that display one or more lines of information, every line is terminated with the 2 characters, CR and LF.

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## CLI Error Messages

The normal response to a command that does not display information is “**Ok**” followed by the CR, LF, and prompt. If the 3M™ Digital Wall Display does not recognize a command, it responds with “**Invalid Command.**” If a command is entered with a value that is out of range or not allowed, the response is “**Invalid Parameter.**” If a command cannot be executed due to a system constraint, the response is “**Ignored.**” Below are some example commands.

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√ **Note**

The 3M Digital Wall Display normally echoes each character that is sent. The CCC command turns the character echo on or off. If echo is on, the prompt is issued. If echo is off, the prompt is not issued.

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√ **Note**

For the rest of this section, CR denotes carriage return and LF denotes line feed.

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## Turning on the 3M Digital Wall Display

Command:

WON	CR
-----	----

3M Digital Wall Display echoes the command and responds with:

Ok	CR	LF	>
----	----	----	---

If the unit is already on, the 3M Digital Wall Display responds with:

Ignored	CR	LF	>
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## Set Volume to a specific value.

Command:

VOL	[space character]	5
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3M Digital Wall Display echoes the command and responds with:

Ok	CR	LF	>
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## **User Level Commands (PLUS Models)**

The following commands are available after the 3M™ Digital Wall Display has been powered on and has transmitted:

DCB Initialization Complete

>

The commands are presented in the following groups:

- Audio Settings (all actions in the Audio tab of the menu plus Mute button on remote control).
- Video Settings (all actions in the Video Input tab and the Video settings tab of the menu).
- PIP Settings (all actions in the PIP tab of the menu).
- Tools (all actions in the Tools tab of the menu).
- Information (all actions in the Information tab of the menu).
- Miscellaneous (includes Blank, Freeze, Pointer, Power, and Timer).

Within each group, the commands are presented in alphabetical order. In the command description, the term “*primary*” refers to the input whose image is shown in the main window. The term “*secondary*” refers to the input whose image is shown in the PIP/PAP/POP window. When PIP/PAP/POP is disabled, the image of the “*primary*” input remains on screen; the image of the “*secondary*” input disappears.

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AUDIO SETTINGS		
Command	Parameters	Description
ADEL	-100 – 100	Sets additional audio delay in milliseconds (multiples of 5), inclusive. (Factory default = zero).
	?	Displays the current additional audio delay in milliseconds.
AINP		Sets audio input to the next one in the cyclic order Line In, Mini In 1, Mini In 2. <b>Note: If the lamp is on, it also assigns the audio input to the current video input, else no assignment is made.</b>
	0	Sets audio input to Line In. <b>Note: If the lamp is on, it also assigns the audio input to the current video input, else no assignment is made.</b>
	1	Sets audio input to Mini In 1. <b>Note: If the lamp is on, it also assigns the audio input to the current video input, else no assignment is made.</b>
	2	Sets audio input to Mini In 2. <b>Note: If the lamp is on, it also assigns the audio input to the current video input, else no assignment is made.</b>
	?	Displays current audio input. 0 - Line In (factory default audio input assignment for Component, S-video and RCA video) 1 - Mini In 1 (factory default audio input assignment for VGA) 2 - Mini In 2 (factory default audio input assignment for DVI-A and DVI-D).
AMOD		Sets audio mode to the next one in the cyclic order Stereo, Mono, Left
	0	Sets audio mode to Stereo: The left channel input drives the left channel output and the right channel input drives the right channel output. (Factory default).
	1	Sets audio mode to Mono: The left and right input channels are mixed and the mixed signal drives both output channels..
	2	Sets audio mode to Left: The left input channel drives both output channels..
	?	Displays current audio mode: 0 – Stereo (Factory default) 1 - Mono, 2 - Left Mono
BAL	-10 – 10	Set balance value from full left (-10) to full right (10). (Factory default is 0).
	?	Displays current balance value.
BAS	-10 – 10	Sets bass value from lowest emphasis (-10) to highest emphasis (10). (Factory default is 0).
	?	Displays current bass value.
LINE		Displays audio line output enable status. 0 – Disabled
	?	1 – Enabled (Factory default)
	0	Disables audio line output.
	1	Enables audio line output.
MUT		Same as pressing the Mute button on the remote, toggles on or off mute on enabled outputs. Ignored if both speaker and line outputs are disabled. Ignored if the lamp is not on.
	0	Unmutes enabled outputs. This command works even when the projector is in standby.
	1	Mutes enabled outputs.
	?	Displays the mute status of enabled outputs: 0 – Unmuted (mute off, Factory default) 1 – Muted (mute on)
RES	AUDIO	Resets all audio settings to factory defaults.

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<b>AUDIO SETTINGS, continued</b>		
<b>Command</b>	<b>Parameters</b>	<b>Description</b>
SPEE		Displays speaker enable status: 0 – Disabled 1 – Enabled ( <i>Factory default</i> )
	?	
	0	Disable speaker output.
	1	Enable speaker output.
TRE		Displays current treble value.
	?	
	-10 - 10	Sets treble value.
VOL		Display current volume. ( <i>Factory default is 4</i> ).
	?	
	0 - 30	Set volume from low (0) to high (30).

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VIDEO SETTINGS		
Command	Parameters	Description
ACT		Displays every input that has signal, one per line. If every input has a signal, the following lines are transmitted: 0 - VGA 1 - DVI-D 2 - DVI-A 3 - Component 4 - S-Video 5 - RCA Video
	?	
ASP		Sets the aspect handling of the primary input to the next one in the cyclic order: Standard, Full Screen, Anamorphic and Crop. Ignored if the lamp is off.
	0	0 - Standard ( <i>Factory default</i> ). If the input aspect ratio is equal to or greater than the Standard-Letterbox threshold, selects Letterbox mode. If the input aspect ratio is equal to or greater than the Pillarbox-Standard threshold, selects Full-Screen mode. If the input aspect ratio is less than the Pillarbox-Standard threshold, selects Pillarbox mode.
	1	1 - Full Screen: image is stretched to fill the entire window.
	2	2 - Anamorphic: image's content is altered to change its apparent aspect ratio without changing the size of the image.
	3	3 - Crop: image is cropped either at the top and bottom or left and right to fit the window.
	?	Displays current aspect mode for the primary image. Values are as described above. <i>Factory default is 0 (Standard)</i> .
BLKL	?	Displays black level setting for system 0 = 0.75 IRE ( <i>Factory default</i> ) 1 = 1.0 IRE
	0	Set black level to 0.75 IRE ( <i>Factory default</i> )
	1	Set black level to 1.0 IRE
BRI	?	Displays current Brightness value.
	0 – 100	Sets Brightness for the current video input. (0=dimmiest to 100=brightest). Factory default is 50.
COL	?	Displays current color value.
	0 – 100	Sets color value. Factory default is 50.
CON	?	Displays current contrast value.
	0 – 100	Sets contrast. Factory default is 50.
DETA	?	Displays current detail enhancement value.
	0 – 100	Sets detail enhancement value for the current input.
HRZ	?	Displays current horizontal adjustment.
	-200 – 200	Sets horizontal adjustment for the current input to that value. -200 positions the image furthest left, 200 furthest right.
	A	Auto detect horizontal position. <b>Note: Auto-detect affects phase, sync, and position. In a future release, this command may affect only the horizontal position.</b> <b>Note: This command initiates the action and immediately returns a prompt.</b>
HUE	?	Displays current hue value.
	0 – 360	Sets hue for the current input. Factory default is 180.

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VIDEO SETTINGS, continued		
Command	Parameters	Description
INP		Same as pressing the Input button on the remote, switches primary input to next active input. Ignored if the lamp is not on. If the current input is the only one with signal present, nothing happens. Factory default is first active input or VGA if no active input. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	0	Set primary input to VGA. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that autoswitch be turned off with the "ABS 1" command. If autoswitch is on and there is no signal on this input, the command behaves as "INP."</b>
	1	Set primary input to DVI-D. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that autoswitch be turned off with the "ABS 1" command. If autoswitch is on and there is no signal on this input, the command behaves as "INP."</b>
	2	Set primary input to DVI-A. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that autoswitch be turned off with the "ABS 1" command. If autoswitch is on and there is no signal on this input, the command behaves as "INP."</b>
	3	Set primary input to Component. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that autoswitch be turned off with the "ABS 1" command. If autoswitch is on and there is no signal on this input, the command behaves as "INP."</b>
	4	Set primary input to S-Video. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that autoswitch be turned off with the "ABS 1" command. If autoswitch is on and there is no signal on this input, the command behaves as "INP."</b>
	5	Set primary input to RCA Video. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that autoswitch be turned off with the "ABS 1" command. If autoswitch is on and there is no signal on this input, the command behaves as "INP."</b>
	?	Displays current primary input: 0 – VGA 1 – DVI-D 2 – DVI-A 3 – Component 4 – S-Video 5 – RCA Video
PHA	0 – 31	Sets phase value. Ignored if current primary input is not VGA or DVI-A.
	A	Auto detects phase on current primary input. Ignored if current primary input is not VGA or DVI-A. <b>Note: Auto-detect affects phase, sync, and position. In a future release, this command may affect only phase.</b> <b>Note: This command initiates the action and immediately returns a prompt.</b>
	?	Displays current phase value. Ignored if current primary input is not VGA or DVI-A.
RES		Resets video settings for the current input to factory defaults.
SHR	0 – 100	Sets sharpness value.
	?	Displays current sharpness value.

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VIDEO SETTINGS, continued		
Command	Parameters	Description
SYN	0 – 200	Adjusts sync to value. Factory default is 100. Ignored if primary input is not DVI-A or VGA.
	A	Auto detect current primary input. Ignored if primary input is not DVI-A and not VGA. <b>Note: Auto-detect affects phase, sync, and position. In a future release, this command may affect only sync.</b> <b>Note: This command initiates the action and immediately returns a prompt.</b>
	?	Displays current sync adjustment. Ignored if primary input is not DVI-A and not VGA.
VRT	-50 – 50	Sets vertical adjustment value.
	A	Auto detect vertical position. <b>Note: Auto-detect affects phase, sync, and position. In a future release, this command may affect only the vertical position.</b> <b>Note: This command initiates the action and immediately returns a prompt.</b>
	?	Displays current vertical adjustment.
WPK	0 – 10	Sets color brightness value for current primary input. <b>Note: The "HELP WPK" response incorrectly states that the setting is not persistent across a reboot or video source switch. The <i>setting does persist</i> across a main power cycle and <i>is restored</i> when the video input is switched to the input that the WPK command affected.</b>
	?	Displays color brightness value for current primary input. 10 - VGA, DVI-A, & DVI-D ( <i>Factory default</i> ) 2 - Component, S-Video, & RCA

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PIP SETTINGS		
Command	Parameters	Description
PHRZ	-200 – 200	Sets horizontal adjustment of the image in the secondary window. Move image furthest left (-200) and move image furthest right (+200).
	?	Displays horizontal adjustment of the image in the secondary window.
PINP		Same as pressing the PIP INP button on the remote, switches the secondary input to the next active input that is not on the same port as the primary input. If the current secondary input is the only one with signal present and available for use as a secondary input, nothing happens. Ignored if the lamp is off or if PIP is off. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	0	Set secondary input to VGA. Ignored if Component is primary input. Ignored if PIP is off. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that PIP autoswitch be turned off with the "PABS 1" command. If PIP autoswitch is on and there is no signal on this input, the command will behave as "PINP."</b>
	1	Set secondary input to DVI-D. Ignored if DVI-A is primary input. Ignored if PIP is Off. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that PIP autoswitch be turned off with the "PABS 1" command. If PIP autoswitch is on and there is no signal on this input, the command will behave as "PINP."</b>
	2	Set secondary input to DVI-A. Ignored if DVI-D is primary input. Ignored if PIP is Off. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that PIP autoswitch be turned off with the "PABS 1" command. If PIP autoswitch is on and there is no signal on this input, the command will behave as "PINP."</b>
	3	Set secondary input to Component. Ignored if VGA is primary input. Ignored if PIP is Off. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that PIP autoswitch be turned off with the "PABS 1" command. If PIP autoswitch is on and there is no signal on this input, the command will behave as "PINP."</b>
	4	Set secondary input to S-Video. Ignored if RCA Video is primary input. Ignored if PIP is Off. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that PIP autoswitch be turned off with the "PABS 1" command. If PIP autoswitch is on and there is no signal on this input, the command will behave as "PINP."</b>
	5	Set secondary input to RCA Video. Ignored if S-Video is primary input. Ignored if PIP is Off. <b>Note: This command initiates the action and immediately returns a prompt.</b> <b>Note: Before using this command, it is recommended that PIP autoswitch be turned off with the "PABS 1" command. If PIP autoswitch is on and there is no signal on this input, the command will behave as "PINP."</b>
	?	Displays current secondary input. Factory default is the first active input that is not the primary input. 0 – VGA 1 – DVI-D 2 – DVI-A 3 – Component 4 – S-Video 5 – RCA Video

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PIP SETTINGS, continued		
Command	Parameters	Description
PIP		Same as pressing the PIP power button on remote, toggles PIP on or off. Ignored if the lamp is off. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	0	Turn off PIP, removing the secondary window. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	1	Turn on PIP, adding and displaying the secondary picture. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	?	Displays PIP status: 0 - off, 1 - on. Factory default is 0 (off). <b>Note: This command initiates the action and immediately returns a prompt.</b>
PLOC		Displays the current location of the PIP window: 0 – upper left 1 – upper right 2 – lower left 3 – lower right
	0	Sets PIP window location to the upper left. <b>Note: When input is changed or swapped or PIP mode is changed, the PIP location reverts to the one last set via the on screen menu. PIP location may be preserved in a future release.</b>
	1	Sets PIP window location to the upper right. <b>Note: When input is changed or swapped or PIP mode is changed, the PIP location reverts to the one last set via the on screen menu. PIP location may be preserved in a future release.</b>
	2	Sets PIP window location to the lower left. <b>Note: When input is changed or swapped or PIP mode is changed, the PIP location reverts to the one last set via the on screen menu. PIP location may be preserved in a future release.</b>
	3	Sets PIP window location to the lower right. <b>Note: When input is changed or swapped or PIP mode is changed, the PIP location reverts to the one last set via the on screen menu. PIP location may be preserved in a future release.</b>
PMOD		Same as pressing the PIP Mode button on the remote, cycles to next item in the circular sequence PIP, PAP, and POP. Ignored if PIP is off or lamp is off. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	0	Sets PIP mode to Picture in Picture (PIP). Ignored if PIP is off. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	1	Sets PIP mode to Picture and Picture (PAP, side by side). Ignored if PIP is off. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	2	Sets PIP mode to Picture over Picture (POP, one above the other). Ignored if PIP is off. <b>Note: This command initiates the action and immediately returns a prompt.</b>
	?	Displays PIP mode: 0 – PIP ( <i>Factory default</i> ) 1 – PAP 2 – POP
PSIZ		Displays the current size of the PIP window: 0 – small 1 – medium ( <i>Factory default</i> ) 2 – large
	0	Sets PIP size to small. Ignored if PIP is off.
	1	Sets PIP size to medium. Ignored if PIP is off.
	2	Sets PIP size to large. Ignored if PIP is off.
PVRT	?	Displays vertical adjustment of the image in the secondary window.
	-50 – 50	Sets vertical adjustment of the image in the secondary window.. 0 restores default position. Ignored if PIP is off.

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## PIP SETTINGS, continued

Command	Parameters	Description
SWAP		Same as pressing the Swap button on the remote. If PIP is on, swaps the primary and secondary images and switches the audio input to the one associated with the new primary image. Ignored if lamp is off. <b>Note: In a future release, the command may be ignored if PIP is off.</b> <b>Note: This command initiates the action and immediately returns a prompt.</b>

## TOOLS

Command	Parameters	Description
ABS		Toggles absolute mode for primary input.
	0	Turns primary input absolute switch mode off (auto switch mode on).
	1	Turns primary input absolute switch mode on (auto switch mode off).
	?	Displays primary input current absolute mode status: 0 - off (auto switch is on) 1 - on (auto switch is off) Factory default is 0 (auto switch is on).
AUT	0 – 120	Sets auto-shutoff timer value (in minutes). Zero disables auto-shutoff. This command will accept a longer time interval than is allowed by the on screen menu which is limited to 60 minutes.
	?	Displays current auto-shutoff timer value in minutes. Factory default is 10.
EDID		Displays current EDID setting: 0 – DVI-D only ( <i>Factory setting</i> ) 1 – DVI-A only 2 – Auto-detect
	?	
	0	Sets EDID to DVI-D only.
	1	Sets EDID to DVI-A only
	2	Sets EDID to Auto-detect
HKST	-40 - 40	Sets horizontal keystone adjustment to value. Factory default is 0.
	?	Displays current horizontal keystone adjustment.
LANG	?	Displays the current language setting: 0 – English 1 – French 2 – German 3 – Italian 4 – Spanish 5 – Japanese 6 – Simplified Chinese
	0 - 6	Sets language to the requested value. <b>Note: The change persists across a power-cycle.</b>
PABS		Toggles secondary input absolute mode On/Off.
	0	Turns off absolute mode for secondary input (auto switch is on).
	1	Turns on absolute mode for secondary input (auto switch is off).
	?	Displays current setting for secondary input absolute mode: 0 – off 1 – on Factory default is 0 (off, auto switch is on).
RES	ALL	Resets all settings to factory defaults.
VKST	-30 – 30	Sets vertical keystone adjustment value. Factory default is 0.
	?	Displays current vertical keystone adjustment.

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<b>INFORMATION</b>		
<b>Command</b>	<b>Parameters</b>	<b>Description</b>
ERR	?	Displays the event log. The ESC or Q key terminates the listing.
	x	X = any non-blank character other than ?. Clears the LEDs error status. The ESC or Q key terminates the listing.
FTF	x	X can be any non-blank, non-digit character. Reads and displays the raw value of the tach register for the top, bottom, ballast and T2 fans as shown: uu – Top Fan uu – Bottom Fan uu – Ballast Fan uu – T2 Fan where uu is the unsigned decimal value of the tach register read. <b>Note: Verbosity 0 does not omit descriptive text.</b>
	0 - 3	Reads the specified fan tach register value, converts it to RPM, and displays the result. (e.g. FTF 0 displays: uu - Top Fan RPM) where uu is the calculated RPM value in unsigned decimal. 0 is top fan, 1 is bottom fan, 2 is ballast fan, and 3 is T2 fan. <b>Note: Verbosity 0 does not omit descriptive text.</b>
INFO		Displays information for all items.
	0	Display network info.
	1	Display USB info.
	2	Display Main input info.
	3	Display PIP input info.
	4	Display TVP info.
	5	Display Audio matrix info.
	6	Display Bootloader (same as technician VER BOOT) info.
7	Display Main input & format, audio input, and PIP input & format (only if PIP is enabled) info.	
LMP		Displays lamp hours, system on hours, system total hours.
	70	Resets lamp hours to zero.
STA		Display DWD status. 0 - Standby, fans off. 1 - On. 2 - Standby, fans on. 3 - Opening. 4 - Lockout.
	?	
TMP		Displays head, DCB and T2 temperature in Centigrade in the form shown below:  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>SDDD C - Head Temperature</p> <p>SDDD C - DCB Temperature</p> <p>SDDD C - sXT2 Temperature</p> </div> Where D is a digit and S is the sign. The blank line between the Head Temperature and DCB Temperature is intentional.
VER		Displays the product version in the format: DP ver x.y

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<b>MISCELLANEOUS</b>		
<b>Command</b>	<b>Parameters</b>	<b>Description</b>
BLA		Same as pressing the Blank button on the remote, toggles blanking. Blanking affects entire screen, not just main or secondary window. Ignored if the lamp is not on.
	0	Blank Off.
	1	Blank On. Blank color is black.
	2	Blank On. Blank color is fushia.
	3	Blank On. Blank color is blue.
	4	Blank On. Blank color is green.
	5	Blank On. Blank color is orange.
	6	Blank On. Blank color is yellow.
	7	Blank On. Blank color is red.
	8	Blank On. Blank color is white.
	?	Displays Blank State. 0 – Blank setting is Off ( <i>Factory default</i> ) (1-8) – Blank screen On and set to specified color.
CCC		Toggles character echo between off and on. Factory default is on.
	0	Turns character echo off. Note: The command prompt (">") is also suppressed.
	1	Turns character echo on. Echo is upper-cased.
	?	Displays current character echo status.
CMD		Displays the current command mode as: User or Controller.
CUR	0	Set curtain mode to "Curtain off"
	1	Set curtain mode to "Red curtain"
	2	Set curtain mode to "Green curtain"
	3	Set curtain mode to "Blue curtain"
	4	Set curtain mode to "White curtain"
	5	Set curtain mode to "Black curtain"
FRE		Toggle Freeze mode. Same as pressing the Freeze button on the remote. Freeze affects the entire screen. Ignored if the lamp is not on.
	0	Freeze Off.
	1	Freeze On.
		?
HELP		Displays a list of available commands.
	Command	Displays help for the specified Command. If a command is unknown, "Unknown Command" is displayed.
MAG		Toggle Magnification to the next entry in the cyclic order (off, low, medium, and high). Same as pressing the Magnify button on the remote. Ignored if the lamp is off.
	0	Turn magnification OFF ( <i>Factory default</i> )
	1	Low Magnification.
	2	Medium Magnification.
	3	High Magnification.
		?

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<b>MISCELLANEOUS, continued</b>		
<b>Command</b>	<b>Parameters</b>	<b>Description</b>
OFF		Put unit into standby. It shall be executed while unit is in any state leading from standby to and including the on state. Ignored when the unit is already in a state that leads to standby. <b>Note: This command initiates the action and immediately returns a prompt.</b>
POI		Set the pointer. Same as pressing the Pointer button on remote, toggles pointer on and off. Ignored if the lamp is off.
	0	Turns pointer off.
	1	Turns pointer on.
	?	Displays the pointer status: 0 – off 1 – on
PWR		Same as pressing the Power button on the remote: If unit is in standby, opens arm. If unit is not in standby, closes arm. <b>Note: The command initiates the action and immediately returns a prompt.</b>
SPLA	?	Displays current value for the splash screen. Factory default is 1.
	1	Set to: Splash Screen 1. <i>(Factory default)</i>
	2	Set to: Splash Screen 2
	C	Set to: Custom Screen. <b>Note: Custom screen is not supported in 2.3.</b>
	N	Set to: No splash screen.
TIM		Same as pressing the Timer button on the remote: If timer is displayed (on), turn it off and remove from display. If timer is off, set and display it (on). If timer is hidden, redisplay it with actual time remaining. Note: Timer is displayed even if 0 minutes remain. Ignored if the lamp is not on.
	0	Turn off the timer and remove it from the display.
	1	Turn on the timer by setting and displaying the timer.
	2	If timer is on, displays remaining time in mm:ss format. If timer is off, displays "Timer Off."
	?	<b>Note: It is possible for time to be on (displayed on screen) with time remaining value of 0:00.</b>
	3 N	Sets timer to N minutes. If second argument is omitted, 10 minutes is used. Change is saved immediately but does not affect the timer that is already on screen. N is in the range 1 through 60.
TYP		Toggles type-ahead mode.
	0	0 - OFF <i>(default in User command mode).</i>
	1	1 - ON <i>(default in all other modes).</i>
	?	Displays current type-ahead mode.
VRB	?	Displays current verbosity setting.
	0 - 1	Sets verbosity to value. 0 is the least verbose and is recommended for controller applications. 1 is medium and is recommended for interactive use. <i>(Factory default is 1).</i> <b>Note: Setting persists across power cycle.</b>
WON		Initiates transition from standby to on. Ignored if unit is not in standby or if lamp is at or beyond end of life. <b>Note: This command initiates the action and immediately returns a prompt.</b>

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## Controller Commands

Controller commands are available after entering the command:

### CONTROLR

**NOTE:** This command is case-sensitive. It must be issued in all capital letters. If you are entering this command interactively, turn on CAP LOCK and do not use the SHIFT key while entering the command.

**NOTE:** After entering controller command level, type-ahead is enabled so that rapidly transmitted commands are saved and processed.

All User commands are available in the Controller command level.

The following **Controller Commands** are added:

Command	Parameters	Description
AINP	10	Sets audio input to Line In and assigns it to the current video input.
	11	Sets audio input to Mini In 1 and assigns it to the current video input.
	12	Sets audio input to Mini In 2 and assigns it to the current video input.
BYE		Returns to user command mode. <b>Note: Type-ahead is disabled upon return to User command level.</b>
GET	0 0	Displays DCB Software version. Same as VER command.
	0 1	Displays bit mask of active inputs (Bit 0 = VGA, Bit 1 = DVI-D, Bit 2 = DVI-A, Bit 3 = Component, Bit 4 = S-Video, Bit 5 = RCA Video) e.g. if VGA, Component, and S-Video are active, display: 011001
	0 2	Displays video format detected by T2. Typical output has the form: Name horizontal vertical refresh
	0 3	Displays standard detected by S-Video and RCA Video decoder. Typical output is "NTSC M" or "PAL."
MEN	0	Turns menu off.
	1	Turns menu on.
	11	Turns menu on with topmost tab selected.
	?	Displays 1 if menu is on, else 0.
POI	?	Returns pointer status and position in absolute coordinates: sts x,y. e.g. 0 0,0. Values are decimal. Upper left corner is origin (0,0).
	X Y A	Turns pointer on, moves it to coordinates specified by X and Y. A is the letter A. Valid range for X and Y are [0,1023] and [0, 767]. Values are decimal.
	X Y or X Y R	Turns pointer on and moves it by X and Y relative to its current position. Valid range for X and Y are [-1023 – 1023] and [-767 – 767]. Relative movement is limited to screen edges. Values are decimal.
UIA		Same as pressing the "A" button on the remote control.
UIB		Same as pressing the "B" button on the remote control.
UIC		Same as pressing the "C" button on the remote control.
UID	1 – 63	Same as pressing "Down" on the remote's navigation nub. Value is the number of times the press is repeated. Valid range is 1 through 63. If value is omitted, 1 is used. Ignored if navigation nub is not being used to control Blank, Magnify, Menu or Pointer.
UIL	1 – 63	Same as pressing "Left" on the remote's navigation nub. Value is the number of times the press is repeated. Valid range is 1 through 63. If value is omitted, 1 is used. Ignored if navigation nub is not being used to control Blank, Magnify, Menu or Pointer.
UIR	1 – 63	Same as pressing "Right" on the remote. Value is the number of the times the press is repeated. Valid range is 1 through 63. If value is omitted, 1 is used. Ignored if navigation nub is not being used to control Blank, Magnify, Menu or Pointer.

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Command	Parameters	Description
UIS		Same as pressing the center button on the keypad located behind the right bezel hatch.
UIT		Same as pressing the “trigger” button on the remote control.
UIU	1 – 63	Same as pressing “Up” on the remote. Value is the number of times the press is repeated. Valid range is 1 through 63. If value is omitted, 1 is used. Ignored if navigation nub is not being used to control Blank, Magnify, Menu or Pointer.
VO+	1 – 30	Increments volume by 1 to 30. If value is omitted, it defaults to 1. If value is 1, the command is the same as pressing the VO+ button on the remote. If enabled outputs are muted, un-mutes enabled outputs. Ignored if the lamp is off and audio is muted.
VO-	1 – 30	Decrements volume by 1 to 30. If value is omitted, it defaults to 1. If the value is 1, the command is the same as pressing the VO- button on the remote. If enabled outputs are muted, un-mutes enabled outputs. Ignored if the lamp is off and audio is muted.
WEBC	0	Disables commands via Ethernet HTTP. <b>Note: This command is available only through the RS232 control port. It is not available via Ethernet HTTP request.</b>
	1	Enables commands via Ethernet HTTP without a control ID. The cid keyword must not be used. <b>Note: This command is available only through the RS232 control port. It is not available via Ethernet HTTP request.</b>
	1 xxxxx	Enables commands via Ethernet HTTP and requires the use of the cid keyword whose value is xxxxx, one to 5 characters including letters, digits, hyphen, underscore, and some punctuation marks and symbols. <b>Note: This command is available only through the RS232 control port. It is not available via Ethernet HTTP request.</b>
	?	Displays current Ethernet control status: <b>There is no indication whether a control ID is required and what its value is.</b> <b>Note: This command is available only through the RS232 control port. It is not available via Ethernet HTTP request.</b>

## Converting a controller application from DP ver 1.x to DP ver 2.0 commands.

The following table summarizes the changes needed to convert Ver 1.x commands to Ver 2.1 commands. Not shown are the commands where the only change is in the displayed descriptive text; for example, the ACT command is not included in the table because the only change is that a hyphen now separates the value and the descriptive text.

DP ver 1.x Command	DP ver 1.x Parameter	DP ver 2.3 Command and Parameter
AIN		AINP ?
	<a_input>	AINP 0-2
AMO		AMOD
	<function>	AMOD 0-2
	?	AMOD ?
ASY		SYN A
ELN	<function>	LINE 0-1
ESP	<function>	SPEE 0-1
INP	<window <v_input>>	INP 0-5 for main window. PINP 0-5 for PIP/PAP/POP window
SWA		SWAP
VOL	0-20	VOL 0-30. The value 4 in DP ver 1.0 and 1.1 now corresponds to the value 11 in DP ver 2.x.

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### Converting a controller application from a Model 9000 to a Model 9000 Plus series unit.

Controller programming change will be needed when a Model 9000 Plus series unit is substituted for a Model 9000 series unit in controller applications. The most significant changes are summarized below:

- INP command arguments have changed to accommodate added inputs.
- The argument range for many audio and video settings has changed.
- Volume increment and decrement commands have been added.
- Input switching time is longer when PIP/PAP/POP is active.
- Power up initialization time is longer.
- Time to go from standby to normal operation is shorter.

Hardware flow control is the supported configuration. If cabling constraints prevent the use of hardware flow control, setting flow control to None on the controller side should work but is not supported at this time.

### Control by Ethernet

This section is directed to controller applications designer, who understands how to issue HTTP requests, such as GET and POST.

The ability to control by Ethernet the 3M™ Digital Wall Display is added in DP ver 2.3. The feature is disabled by default. To enable the feature, the Controller command WEBC must be issued on the RS232 control port:

```
CONTROLR  
WEBC 1
```

Once enabled, the feature remains available until disabled. To issue a command via Ethernet, use an HTTP request with the following URL:

```
http://<IP_Address>/cli?cmd=<command_and_parameters>
```

Where <IP\_Address> is replaced by the IP address of the 3M™ Digital Wall Display.

In the rest of this section, the examples assume the IP\_Address is 123.45.67.89.

<command\_and\_parameters> is replaced by the command and its parameters.

The HTTP response contains the ASCII text produced by the command.

For example, the 3M™ Digital Wall Display can be turned on with the following URL:

```
http://123.45.67.89/cli?cmd=WON
```

The webpage will show the command and its response:

```
WON Ok
```

When there are parameters, a space normally separates the command and every parameter. However, URL standard does not permit a space, so it must be encoded as “%20.” To switch the input to S-Video, use the following URL:

```
http://123.45.67.89/cli?cmd=INP%204
```

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The table below lists the encoding for the characters that might be used for controlling or querying a 3M™ Digital Wall Display:

Character	URL Encoding	cmd Example	RS232 Equivalent
Space	%20	VOL%204	VOL 4
?	%3f	INP%20%3f	INP ?
+	%2b	VO%2b	VO+
-	%2d	VO%2d	VO-

When the “control by Ethernet” feature is enabled, an optional control ID may be associated with the 3M™ Digital Wall Display. The control ID can be one to 5 characters, including letters, digits, hyphen, and underscore. The following commands:

```
CONTROLR  
WEBC 1 RM302
```

enable “control by Ethernet” with the control ID “RM302.” If a control ID is specified, it must always be included in the HTTP request as shown by the following URL example.

<http://123.45.67.89/cli?cid=RM302&cmd=INP%20>

If the correct control ID is supplied, the command is executed. If no control ID or an incorrect one is given, the response is “Invalid parameter.”

The use of control ID has several benefits:

- In a network containing many projectors whose IP addresses may change, the use of unique control ID for every projector ensures that commands directed to a particular projector affect only that projector.
- It prevents accidental control of a projector by casual users who are familiar with the control by Ethernet feature. Note: the control ID is not a network security mechanism and is not intended to prevent control by unauthorized personnel.

### Troubleshooting with Control by Ethernet

This section is directed to users such as technicians who want to issue commands to the 3M™ Digital Wall Display using a web browser instead of the RS232 control port. While any web browser may be used to interact with the 3M™ Digital Wall Display, the rest of this section assumes the web browser is Windows® Internet Explorer version 7.

One cannot use a web browser to issue commands to a 3M™ Digital Wall Display 9000 Plus until its “control by Ethernet” feature has been enabled. The feature can only be enabled using a command on the RS232 port. See the previous section for more details. However, it is still possible to get some status information using the web browser by entering the IP address of the projector in the URL field.

For simplicity’s sake, the rest of this section assumes the “control by Ethernet” feature is enabled with no control ID. If the “control by Ethernet” feature is enabled with a control ID, learn how to use it by reading the previous section.

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To reliably use the “control by Ethernet” feature with a web browser, both the web browser and the 3M™ Digital Wall Display 9000 Plus must be correctly setup.

**First**, disable web page caching in the web browser. Although web page caching speeds the loading of a complex web page from typical web sites, caching can cause confusion by redisplaying an old page containing outdated information instead of retrieving a fresh copy with updated information. To disable web page caching, do the following steps:

1. Left click on the Tools menu.
2. Left click on Internet Options.
3. Left click on the “General” tab.
4. In the section labeled “Browsing History,” left click on the Settings button.
5. In the window labeled “Temporary Files and History Settings” record the current setting. It is likely to be “Automatically.” You will need to restore this setting after you are finished using the web browser to interact with the 3M™ Digital Wall Display.
6. Select the button labeled “Every time I visit the webpage.”
7. Left click the “OK” button.
8. In the “Internet Options” window, left click the “OK” button.

**Second**, set up the 3M™ Digital Wall Display for use with a web browser by entering the following URL:  
`http://<IP_Address>/cli?rs=<br>`

Where <IP\_Address> is replaced by the IP address of the 3M™ Digital Wall Display.

In the rest of this section, the examples assume the IP\_Address is 123.45.67.89.

The resulting web page will show Ok.

With web page caching disabled and the 3M™ Digital Wall Display set up to transmit web page line breaks, you can now use the web browser to interactively issue commands and display their responses. Enter the URL:

`http://<IP_Address>/cli?cmd=<command_and_parameters>`

Where <IP\_Address> is replaced by the IP address of the 3M™ Digital Wall Display. The

In the rest of this section, the examples below assume the IP Address is 123.45.67.89.

<command\_and\_parameters> is replaced by the command and its parameters.

The resulting web page will display the text produced by the command.

For example, the RS232 command to change the video input to S-Video is:

INP 4

To issue the command using the web browser, enter the URL:

`http://123.45.67.89/cli?cmd=INP 4`

The resulting web page shows:

INP 4

Ok

You may have noticed that after pressing the Enter key, the URL changed to:

<http://123.45.67.89/cli?cmd=INP%204>

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That's because the web browser knows that spaces are not allowed in a URL and automatically converted the space to its URL encoding: %20. Most commands do not require you to encode any characters. However, if you want to query the status of the system with a command that uses a question mark, you'll need to encode the question mark as: %3f. For example, the command "ABS ?" can be issued by entering the URL:

`http://123.45.67.89/cli?cmd=ABS %3f`

The resulting web page shows:

ABS ?

0 - off (autoswitch is on)

When you are finished using a web browser to interact with the 3M™ Digital Wall Display, be sure to restore your web browser's original web page caching setting. Follow the steps you used to disable web caching except that in step 6, substitute the value recorded in step 5 when you disabled the cache. Put the 3M™ Digital Wall Display into standby, then cycle the main power switch.

### Additional Information

If you have any questions about this bulletin or any 3M Projection Systems product, please contact the nearest location below.

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