HDG-4 IR Remote Control

AccuPel HDG-4
IR Remote Control

for the

AccuPel HDG-4000
Analog/Digital Video
Calibration Generator

USER MANUAL

Version 0.91

Table of Contents

Manufactured in USA

IR Remote Control Functions

The AccuPel HDG-4 IR (Infrared) Remote Control provides selection of all calibration patterns, signal settings, and special modes of the AccuPel HDG-4000 Analog/Digital Video Calibration Generator. It is also used to select settings in the HDG-4000 On-Screen Display (OSD) menu.

The HDG-4000 Format LEDs flash each time an IR remote control command is received. If an invalid remote control command is received, the Format LEDs will blink rapidly 4-times.
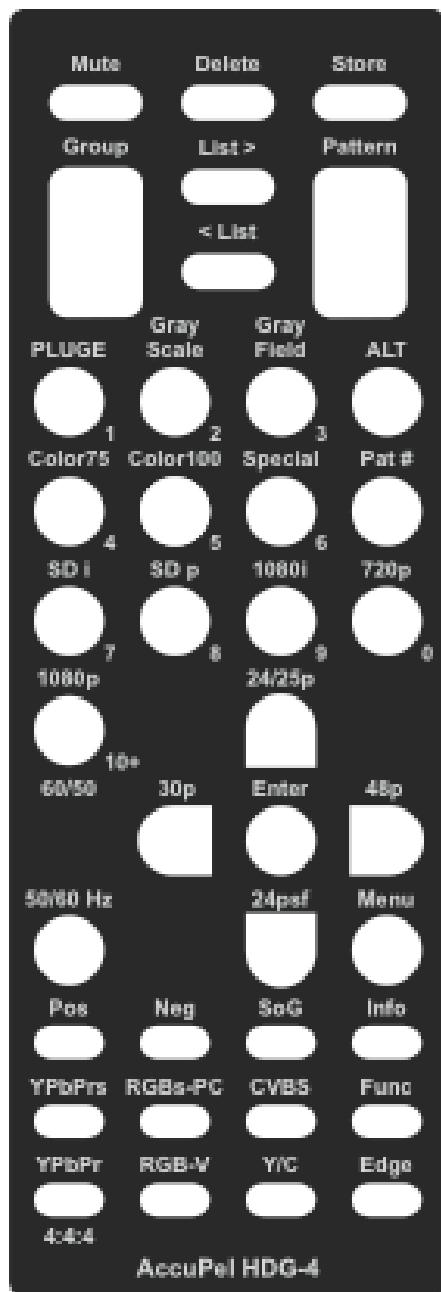
Output Selection

Directly select the Output type for analog and digital video signals.

YPbPr - Selects YPbPr analog signals (without 7.5 IRE black-level setup), and 4:4:4 YCbCr digital signals.

YPbPrs - Selects YPbPr analog signals with 7.5 IRE black-level setup, and 4:2:2 YCbCr digital signals.

RGB-V - selects RGB analog signals (without 7.5 IRE setup), and RGB digital signals with standard digital video levels (digital level 16 for black and digital level 235 for 100% reference white).

RGBs-PC - selects RGB analog signals with 7.5 IRE setup, and RGB digital signals with PC digital video levels (digital level 0 for black and digital level 255 for 100% reference white).

Y/C - Selects Y/C (S-video) analog signals from the 4-pin mini-DIN connector.

CVBS - Selects CVBS (composite video) analog signals from the 4-pin mini-DIN connector.

Note: The 7.5 IRE black-level setup on NTSC (480i) Y/C and CVBS signals can be disabled in the OSD menu. PAL (576i) Y/C and CVBS signals never have black-level setup.

Sync Selection

Pos, Neg, SoG – selects positive or negative analog RGB HV sync polarity, or analog RGB signals with embedded sync-on-green.

Note: HV sync polarity for digital signals is set according to the EIA/CEA-861-B standard. But the digital HV sync polarity can be overridden in the OSD menu. HD YPbPr signals and HD analog RGB signals with SoG have Tri-level embedded sync, while SD analog signals have Bi-level embedded sync. Bi-level embedded sync can also be selected for HD analog signals in the OSD menu.
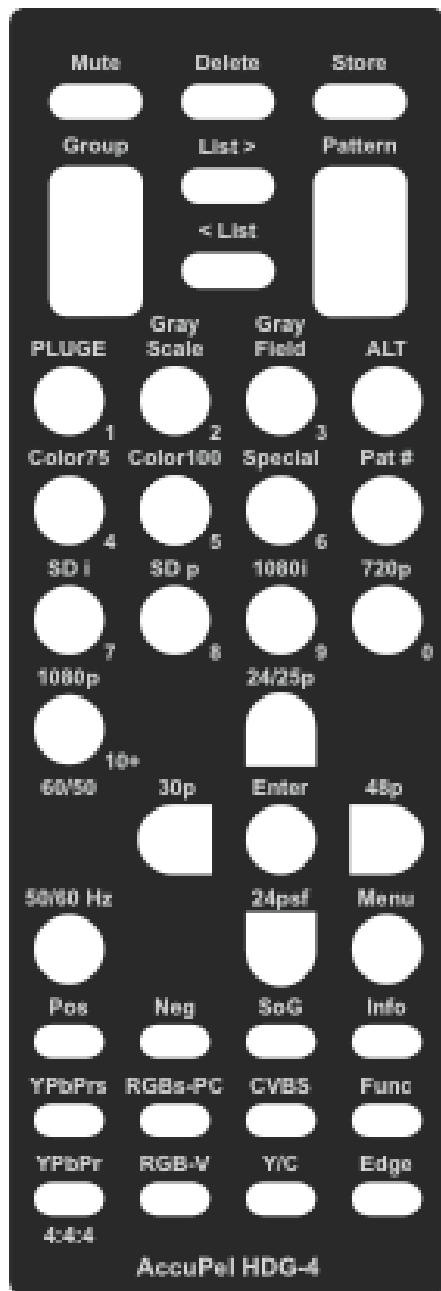
Format Selection

50/60 Hz – Selects 50 Hz or 60 Hz (59.94 Hz) generator formats. (HDG-4000 L2 only) The selected mode is displayed on the 50 Hz, 60 Hz front panel Format LEDs.

SD i – Selects 480i (59.94 Hz) or 576i (50 Hz) signals.

SD p – Selects 480p (59.94 Hz) or 576p (50 Hz) signals.

1080i – Selects 1080i59.94, 1080i60, or 1080i50 signals.

720p – Selects 720p59.94, 720p60, or 1080i50 signals.

1080p (60/50) – Selects 1080p59.94, 1080p60, or 1080p50 signals.

ALT **24/25p** – Selects 1080p23.98, 1080p24, or 1080p25 signals.

ALT **24psf** – Selects 1080p23.98sf or 1080p24sf (segmented frame) signals.

ALT **30p** – Selects 1080p29.97 or 1080p30 signals.

ALT **48p** – Selects 1080p47.95 or 1080p48 signals.

Note: **ALT** means press the ALT button first and then the desired format button.

Note: North American standard formats are based on 59.94 Hz (60/1.001 Hz), which is the power-up default state of the HDG-4000. You may select 59.94 or 60 Hz HD formats in the OSD menu. The 59.94 mode produces the 23.98p, 23.98psf, 29.97p, and 47.95p formats (more precisely they are 24/1.001, 30/1.001, and 48/1.001 respectively).

Note: 1080p formats are indicated on the HDG-4000 front panel by illuminating the 1080p LED and the 60/50, 24/25, or User LED. The 24psf, 30p, and 48p modes illuminate the User Format LED.

Pattern Selection

There are three methods of selecting patterns – sequential group and pattern selection, direct selection by group and pattern # (number), and user-defined pattern lists.

Sequential Group & Pattern Selection
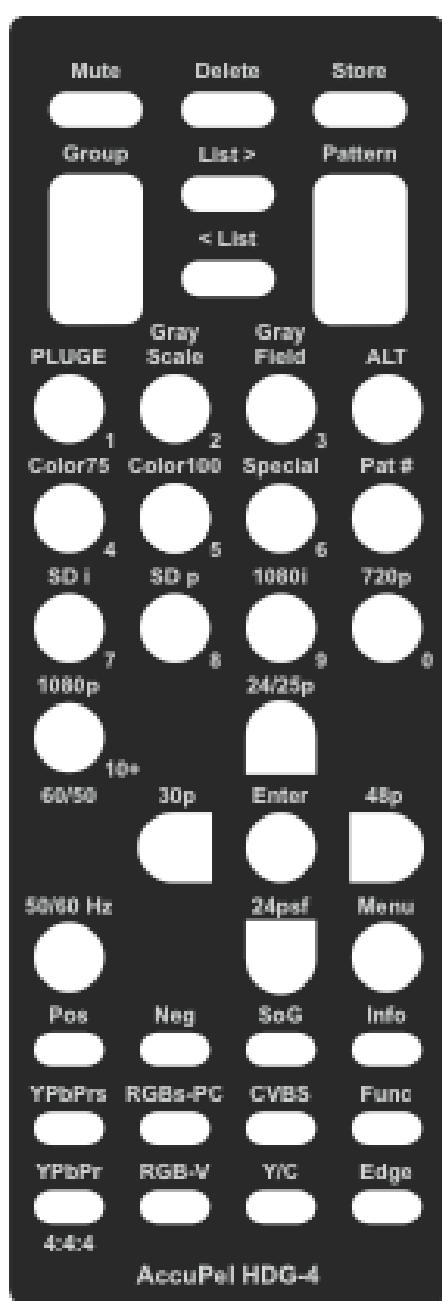
Group

Press the top of the Group rocker button to move forward to the next pattern Group. Press the bottom of the Group rocker button to move backward to the previous pattern group.

Pattern

Press the top of the Pattern rocker button to move to the next pattern in the current pattern group. Press the bottom of the Pattern rocker button to move to the previous pattern in the current pattern group.

Direct Group & Pattern Selection

Color75, Color100, Special, PLUGE, Gray Scale, Gray Field - Directly select one of the 6 major pattern groups.

ALT Gray Scale – Press this button combination to select or alternate between 0%-10% Low-GS (Gray Scale) patterns and 100%-109% High-GS patterns. Press the Gray Scale button only to return to the default 0%-100% Gray Scale patterns. The Gray Scale LED will blink slowly when the Low-GS or High-GS mode is enabled.

Note: The background of the High-GS windows is 100% luma to examine a display's ability to differentiate levels near 100%.

Note: 100%-109% patterns are not available for digital RGB-PC signals because the maximum signal amplitude is 100% (digital 255) for RGB PC signals.

Pat

Press the Pat # button followed by a number button (0-10) to directly select a pattern in the current pattern group. The active Group LED will flash while waiting for the number button to be pressed. Press any other button to cancel the Pat # entry process.

This function is primarily useful to quickly select a specific grayscale window value in the Gray Scale group. Pattern #1 selects the 10 IRE window, pattern #2 selects the 20 IRE window, … pattern #10 selects the 100 IRE window. When the 1%-10% Grayscale pattern group is enabled, pattern #1 selects the 1 IRE window, pattern #2 selects the 2 IRE window, etc. The Pat # table on the next page shows the pattern #'s for all groups.
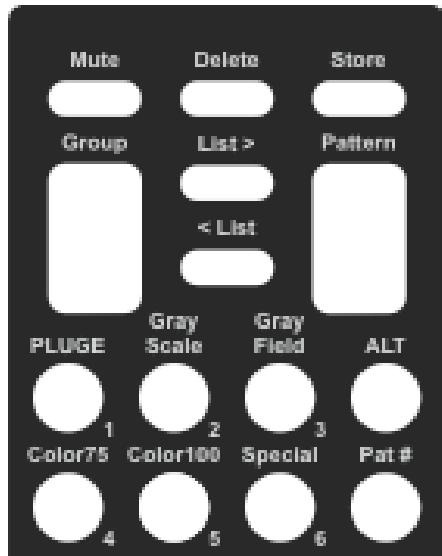
User-Defined Pattern List

Up to 6 patterns can be stored in the user-defined pattern list. The user-defined pattern list is stored in the HDG-4000 and is discarded if the power is disconnected.

Store - The currently displayed pattern is stored in the user-defined pattern list.

Delete - The currently displayed pattern is deleted from the user-defined pattern list.

List > - The next pattern in the user-defined pattern list becomes the current pattern.

< List - The previous pattern in the user-defined pattern list becomes the current pattern.

Pat # Table						
	Group					
Pat #	**Color75**	**Color100**	**Special**	**PLUGE**	**Gray Scale**	**Gray Field**
0	75% Split Color Bars	100% Split Color Bars	Crosshatch	0% APL PLUGE	User 100 (10) (90) % Window w/PLUGE	Overscan
1	75% Color Bars	100% Color Bars	Inverse Crosshatch	25% APL PLUGE	10 (1) (100.9) % Window w/PLUGE	Inverse Overscan
2	75% Red Window	100% Red Field	Dual Needle Pulse	50% APL PLUGE	20 (2) (101.8) % Window w/PLUGE	User 100% Gray Field
3	75% Green Window	100% Green Field	Color Multi-burst / Chroma BW	25% Window w/PLUGE	30 (3) (102.7) % Window w/PLUGE	0% Gray Field
4	75% Blue Window	100% Blue Field	Multi-burst	50% Window w/PLUGE	40 (4) (103.6) % Window w/PLUGE	25% Gray Field
5	75% Yellow Window	100% Yellow Field	Cross Hair	75% Window w/PLUGE	50 (5) (104.5) % Window w/PLUGE	50% Gray Field
6	75% Cyan Window	100% Cyan Field	Sharpness	100% Window w/PLUGE	60 (6) (105.4) % Window w/PLUGE	75% Gray Field
7	75% Magenta Window	100% Magenta Field	100% / 0% Checkerboard	100%Window w/ 98% PLUGE	70 (7) (106.3) % Window w/PLUGE	100% Gray Field
8	User 75% Gray Window	User 100% Gray Field	100% / 0% Inv Checkerboard	50/100 % Window w/PLUGE	80 (8) (107.2) % Window w/PLUGE	
9			User 50% / 0% Checkerboard		90 (9) (108.1) % Window w/PLUGE	
10			U 50% / 0% Inv Checkerboard		100 (10) (109) % Window w/PLUGE	

Other Functions

Edge - Selects Fast or Slow analog video edge transitions. The Slow Edge mode changes the edge transition rate of the HDG-4000 analog signals to a rate chosen specifically for each video format. The Edge mode only affects analog signals. It does not affect the digital video output. The currently selected Output LED will blink slowly when the Slow Edge mode is enabled.

Mute - This button produces a 0% black field. Press any button on the remote control (including Mute) to restore the previous pattern.

Func - This button is reserved for new features.

On Screen Display (OSD) Systems

Pattern Information

Info – Each time a pattern is changed the name of the pattern, which includes important signal identification information, is displayed on-screen for approximately one second. Press the Info button to display the pattern information continuously. Press the Info button again to resume the default display period.

OSD Menu System

The OSD Menu is produced by all analog and digital outputs, for all signal formats. The OSD Menu provides additional features such as user definable grayscale values and colors, access to advanced signal parameters, communications port control, and the ability to specify generator power-up default modes.

OSD Menu Navigation

Press the Menu button to display the OSD window, which is organized into three columns. The left column of the OSD window currently lists six menus – User Level, Output, Sync, Misc, Com Ports, and Defaults. Use the cursor keys to highlight the desired menu, and then move into the middle column and highlight a menu item. The current status of each highlighted item is shown in the right column. To change a setting move into the right column and highlight one of the alternative settings that will be listed in that column. In most cases it is not necessary to press the Enter key unless "Enter" appears in the right column. In that case highlight "Enter" and press the remote control Enter key to proceed.

Press Menu to turn the OSD menu on or off. The cursor position in the OSD menu is maintained when the menu is turned on or off, so it is easy to turn the menu off when making measurements or adjusting a calibration setting, and then turn it back on again to change the same menu item.

OSD Menus

User Level

Field – Use the numeric [0-9] buttons followed by the Enter button to enter a luma integer value from 0-109% for the User Field in the Gray Field group. To restore the original 100% User Field select Factory and press Enter. Select "Cancel" and press Enter to leave the menu without making any change.

Window – Use the numeric [0-9] buttons followed by the Enter button to enter a luma integer value from 0-109% for the User Window in the Gray Scale group. To restore the original 100% User Window select Factory and press Enter. Select "Cancel" and press Enter to leave the menu without making any change.

Checkerboard – Use the numeric [0-9] buttons followed by the Enter button to enter a luma integer value from 0-109% for the User Checkerboard and User Inverse Checkerboard in the Special group. To restore the original 50% Checkerboard luma value select Factory and press Enter. Select "Cancel" and press Enter to leave the menu without making any change.

Color – Use the Up and Down cursor buttons to select the R, G, or B entry field. Use the numeric [0-9] buttons to enter R, G, or B integer values from 0-109%. Press the Enter button to enter the R, G, B values as the new color of the User Window and User Field in the Color 75 and Color 100 groups respectively. The "White" bars in the color bar patterns are also changed to allow comparison with other known colors. To restore the original 75% gray and 100% white colors select Factory and press Enter. Select "Cancel" to leave the menu without making any change.

Note: After you Enter the value changing process you can only exit that process by completing a value entry, by highlighting Factory and pressing Enter to reset the value(s), or by highlighting Cancel and pressing Enter. After you Cancel or Enter a new value, a "Change" option is highlighted in the menu. Press Enter to repeat the User value entry process, or press the left cursor button to move to another menu item.

Note: As you enter digits the digits shift to the left. Press zeros to clear a mis-typed number without using Cancel to exit the menu.

Output

CVBS/YC – Select 0 IRE or 7.5 IRE black level setup for NTSC (480i) CVBS or Y/C signals.

Channels – Enable/disable any combination of RGB or YCbCr (YPbPr) output signals.

CVBS C BW – Select the CVBS (composite video) chroma signal bandwidth.

YC C BW – Select the Y/C (S-video) chroma signal bandwidth.

Color Matrix – Select standard YCbCr/YPbPr HD/SD Rec. 709/Rec. 601 color-matrix encoding, or reverse the encoding (HD/SD Rec. 601/Rec. 709).

HD V Rate – Select 59.94 or 60.00 Hz HD signals.

Sync

HD DVI – Select positive or negative HD digital sync.

HD DVI – Select positive or negative SD digital sync.

HD Y Type – Select Tri-level or Bi-level HD analog YPbPr embedded sync.

HD G Type – Select Tri-level or Bi-level HD analog RGB embedded sync (SoG).

HD HV Time – Select Normal or SMPTE analog RGB HV Sync positioning.

Y/G Phase – Select sub-pixel analog YPbPr embedded sync positioning.

Scope Trigger – Select normal analog HV sync or special V sync for an oscilloscope trigger.

Misc

Info – Serial number, levels, and options information.

Com Ports

RS232 Baud – Baud rate selection.

USB Baud – Baud rate selection.

RS232 Flow – Flow control selection.

RS232 Flow – Flow control selection.

Defaults (Power up)

60/50 Hz – Power up in 60 Hz or 50 Hz mode (HDG-4000 L2 only).

RGB Sync – Power up analog RGB signals with SoG, or Positive or Negative HV sync.

CVBS/YC – Power up with 0 IRE or 7.5 IRE setup for NTSC (480i) CVBS and Y/C signals.

RS232 Baud – Power up baud rate.

USB Baud – Power up baud rate.

User Format – Power up with front panel User Format set to select 1080p24sf, 1080p30, or 1080p48.

Save Items – Save all of the above power up defaults.