Display Control Command Group

Display Overview

You use the commands in the Display Control Command Group to change the graticule style, the displayed intensities, and to set the characteristics of the waveform display.

You can set the following:

- Background and foreground color as well as cursor, histogram, mask, and measurement annotation colors.
- Display of date and time; cursor, histogram, mask, and measurement readouts; measurement annotations, and the mode in which waveforms are displayed.
- Interpolation to increase sample density of waveform for high acquisition rates

Use the commands to set the style that best displays your waveforms and graticule display properties. Note that the mode you choose globally affects all displayed waveforms.

Display Control Commands

Command	Description
DISplay?	Returns current display settings
DISplay:CLOCk?	Sets the display of the date/time stamp
DISplay:CLOCk	Returns the display of the date/time stamp
DISplay:COLOr?	Returns color group settings
DISplay:COLOr:MATHCOLOR?	Returns the color to be used for math traces
DISplay:COLOr:MATHCOLOR	Sets the color to be used for math traces
DISplay:COLOr:PALETTE?	Returns the palette to be used for trace display
DISplay:COLOr:PALETTE	Sets the palette to be used for trace display
DISplay:COLOr:REFCOLOR?	Returns the color to be used for reference traces
DISplay:COLOr:REFCOLOR	Sets the color to be used for reference traces
DISplay:FILTer?	Returns the type of interpolation to use for the display
DISplay:FILTer	Sets the type of interpolation to use for the display
DISplay:FORMat?	Returns the display format
DISplay:FORMat	Sets the display format
DISplay:GRAticule?	Returns the type of graticule that is displayed
DISplay:GRAticule	Sets the type of graticule that is displayed
DISplay:INTENSITy?	Returns the waveform saturation level, autobright state and screensaver settings
DISplay:INTENSITy:AUTOBRIGHT?	Returns the autobright state
DISplay:INTENSITy:AUTOBRIGHT	Sets auto-leveling of waveform saturation
DISplay:INTENSITy:SCREENSAVER?	Returns the display protection feature state
DISplay:INTENSITy:SCREENSAVER	Enables automatic display protection features
DISplay:INTENSITy:SCREENSAVER DELAY?	Returns the display protection timeout state
DISplay:INTENSITy:SCREENSAVER DELAY	Sets the display protection timeout
DISplay:INTENSITy:WAVEform?	Returns the intensity saturation of the waveforms
DISplay:INTENSITy:WAVEform	Sets the intensity saturation of the waveforms

DISplay:PERSistence?	Returns display persistence setting
DISplay:PERSistence	Sets display persistence setting
DISplay:STYLE?	Returns data display style
DISplay:STYLE	Sets data display style
DISplay:TRIGBar?	Returns the display setting of the trigger level indicator bar(s)
DISplay:TRIGBar	Sets the display of the trigger level indicator bar(s)
DISplay:TRIGT?	Returns the display setting of the trigger point indicator
DISplay:TRIGT	Sets the display of the trigger point indicator
DISplay:VARPersist?	Returns the persistence decay time
DISplay:VARPersist	Sets the persistence decay time

DISplay?

Description

This query-only command returns the current display settings. This command is equivalent to selecting Display Setup from the Display menu and then viewing the contents of each tab.

Group

Display Control

Syntax

```
DISplay?
```

Example

```
DISplay?
```

This query might return

```
:DISPLAY:CLOCK 1
;COLOR:PALETTE NORMAL;MATHCOLOR DEFAULT
;REFCOLOR DEFAULT;:DISPLAY:FILTER SINX;FORMAT YT
;GRATICULE FULL;INTENSITY:WAVEFORM 6.0000E+01
;AUTOBRIGHT 1;SCREENSAVER 1;SCREENSAVERDELAY 28800,
:DISPLAY:PERSISTENCE OFF;STYLE VECTORS;TRIGBAR SHORT
;TRIGT 0;VARPERSIST 5.0000E-01
```

DISplay:CLOCk

Description

This command sets or queries the display of the date and time. This is equivalent to selecting Display Date & Time from the Display menu. The query form of this command returns an ON (1) or an OFF (0).

Group

Display Control

Syntax 1

```
DISplay:CLOCk {ON|OFF|<NR1>}
```

Syntax 2

```
DISplay:CLOCk?
```

Arguments

- `ON`

  This enables display of date and time.

- `OFF`

  This disables display of date and time.

- `<NR1>`

  A 0 disables display of date and time; any other value enables display of date and time.

Example 1

```
DISplay:CLOCk ON
```

This command enables display of date and time.

Example 2

```
DISplay:CLOCk?
```

This query might return `:DISPLAY:CLOCK 1`, indicating that the display of date and time is currently enabled.

DISplay:COLOr?

Description

This query-only command returns the settings from the PALETTE, MATHCOLOR and REFCOLOR commands. This is equivalent to selecting Colors from the Display menu.

Group

Display Control

Syntax

```
DISplay:COLOr?
```

Arguments

None.

Example

```
DISplay:COLOr?
```

This query might return `:DISPLAY:COLOR:PALETTE NORMAL;MATHCOLOR DEFAULT;REFCOLOR INHERIT`

DISplay:COLOr:PALETTE

Description

This command sets or queries the palette to be used for trace display. This is equivalent to selecting Colors from the Display menu and choosing from the displayed color palette options.

Group

Display Control

Related Commands

DISplay:COLOr (see page 115), DISplay:COLOr:MATHCOLOr (see page 117), DISplay:COLOr:REFCOLOr (see page 118)

Syntax 1

```
DISplay:COLOr:PALETTE {NORMal|MONOGREEN|MONOGRAY|TEMPErature|SPECTral}
```

Syntax 2

```
DISplay:COLOr:PALETTE?
```

Arguments

- `NORMal`

  This colors traces according to their channel. This is the default color palette.

- `MONOGREEN`

  This colors traces green, emulating a traditional oscilloscope color palette.

- `MONOGRAY`

  This colors traces gray, emulating a monochrome TDS instrument.

- `TEMPErature`

  All traces share a multi-colored palette, where "intensity" is represented by hue; blue for least frequently hit, red for most frequently hit.

- `SPECTral`

  All traces share a multi-colored palette, where "intensity" is represented by hue; red for least frequently hit, blue for most frequently hit.

Example 1

```
DISplay:COLOr:PALETTE MONOGRAY
```

This command sets the palette for all display types.

Example 2

```
DISplay:COLOr:PALETTE?
```

This query might return `:DISPLAY:COLOR:PALETTE NORMAL`, indicating that the Normal color palette is currently selected, which colors traces according to their channel.

DISplay:COLOr:MATHCOLOr

Description

This command sets or queries the color to be used for math traces, either in the palette's nominal Math color, or according to the color of the source waveform. This command is equivalent to selecting Display Setup from the Display menu and then choosing the Colors tab.

Group

Display Control

Related Commands

DISplay:COLOr:PALETTE (see page 116)

Syntax 1

```
DISplay:COLOr:MATHCOLOr {DEFAULT|INHERIT}
```

Syntax 2

```
DISplay:COLOr:MATHCOLOr?
```

Arguments

- `DEFAULT`

  This sets color math traces in nominal palette math color, which is red.

- `INHERIT`

  This sets color math traces in the source waveform color. Math waveforms are drawn in the same color as their primary source waveform.

Example 1

```
DISplay:COLOr:MATHCOLOr DEFAULT
```

This command sets the color math traces in the nominal palette math color.

Example 2

```
DISplay:COLOr:MATHCOLOr?
```

This query might return `:DISPLAY:COLOR:MATHCOLOR INHERIT`, indicating that the primary source waveform color is used for each math trace.

DISplay:COLOr:REFCOLOr

Description

This command sets or queries the color to be used for reference traces, either in the palette's nominal REF color or according to the color of the source waveform. This command is equivalent to selecting Display Setup from the Display menu and then choosing the Colors tab.

Group

Display Control

Related Commands

DISplay:COLOr:PALETTE (see page 116)

Syntax 1

```
DISplay:COLOr:REFCOLOr {DEFAULT|INHERIT}
```

Syntax 2

```
DISplay:COLOr:REFCOLOr?
```

Arguments

- `DEFAULT`

  This assigns color reference traces in nominal palette reference color, which is off-white.

- `INHERIT`

  This assigns color reference traces in the source waveform color.

Example 1

```
DISplay:COLOr:REFCOLOr DEFAULT
```

This command assigns color reference traces in nominal palette reference color, which is off-white.

Example 2

```
DISplay:COLOr:REFCOLOr?
```

This query might return `:DISPLAY:COLOR:REFCOLOR INHERIT`, indicating that source waveform color is used for reference traces.

DISplay:FILTer

Description

This command sets or queries the type of interpolation to use for the display. Filtering only applies to normal-mode acquisition. DPO never interpolates. The DISplay:FILTer command also provides selection for acquisition interpolation type. This command is equivalent to selecting Waveform Interpolation from the Display menu.

Group

Display Control

Syntax 1

```
DISplay:FILTer {LINEAr|SINX}
```

Syntax 2

```
DISplay:FILTer?
```

Arguments

- `LINEAr`

  This specifies linear interpolation where acquired points are connected with straight lines.

- `SINX`

  This specifies sin(x)/x interpolation where acquired points are fit to a curve.

Example 1

```
DISplay:FILTer SINX
```

This command specifies sine-curve interpolation when magnifying waveforms.

Example 2

```
DISplay:FILTer?
```

This query might return `:DISPLAY:FILTER LINEAR`, indicating that straight-line interpolation is specified for magnifying waveforms.

DISplay:FORMat

Description

This command sets or queries the display format. This command is equivalent to setting Format from the Display menu.

Group

Display Control

Syntax 1

```
DISplay:FORMat {YT|XY|XYZ}
```

Syntax 2

```
DISplay:FORMat?
```

Arguments

- `YT`

  This sets the display to a voltage versus time format and is the normal mode.

- `XY`

  This displays one waveform against another. The source pairs that make up an XY trace are predefined and are listed in the following table. Selecting one source causes its corresponding source to be implicitly selected, producing a single trace from the two input waveforms.

XY Format Pairs	
X-Axis Source	**Y-Axis Source**
Ch 1	Ch 2
Ch 3 (or AUX 1) (All models except TDS 410A)	Ch 4 (or AUX 2) (All models except TDS 410A)
Ref 1	Ref 2
Ref 3	Ref 4

  Note: Selecting XY or XYZ forces a switch to FASTAcq mode.

- `XYZ`

  This combines channel 1 and channel 2 for X and Y coordinates and uses channel 3 to provide the intensity value for the sample. XYZ groups channels 1, 2 and 3 to form a single trace. Other channel, math and reference waveforms are turned off.

Example 1

```
DISplay:FORMat YT
```

This command selects a voltage versus time format for the display.

Example 2

```
DISplay:FORMat?
```

This query might return `:DISPLAY:FORMAT XYZ` for the display format.

DISplay:GRATicule

Description

This command selects or queries the type of graticule that is displayed. This command is equivalent to selecting Graticule Style from the Display menu.

Group

Display Control

Syntax 1

```
DISplay:GRAticule {CROSSHair|FRAme|FULl|GRId}
```

Syntax 2

```
DISplay:GRAticule?
```

Arguments

- `CROSSHair`

  This specifies a frame and cross hairs.

- `FRAme`

  This specifies just a frame.

- `FULl`

  This specifies a frame, a grid and cross hairs.

- `GRId`

  This specifies a frame and grid only.

Example 1

```
DISplay:GRAticule FRAme
```

This command sets the graticule type to display the frame only.

Example 2

```
DISplay:GRAticule?
```

This query might return `:DISPLAY:GRATICULE FULL`, indicating that all graticule elements are selected.

DISplay:INTENSITy?

Description

This query-only command returns the waveform saturation level, autobright state and screensaver settings. This command is equivalent to selecting Display Setup from the Display menu and then choosing the Appearance tab.

Group

Display Control

Related Commands

DISplay:INTENSITy:AUTOBright (see page 123), DISplay:INTENSITy:WAVEform (see page 124), DISplay:INTENSITy:SCREENSAVER (see page 125), DISplay:INTENSITy:SCREENSAVERDELAY (see page 126)

Syntax

```
DISplay:INTENSITy?
```

Arguments

None

Example

```
DISplay:INTENSITy?
```

This query might return `:DISPLAY:INTENSITY:WAVEFORM 7.5000E+01; AUTOBRIGHT 1; SCREENSAVER 1; SCREENSAVERDELAY 120`

DISplay:INTENSITy:AUTOBright

Description

This command enables automatic, ongoing adjustment of the hi-res to 4-bit-display mapping transform for converting DPO or RecordVu images to display images. The query form returns an ON (1) or OFF (0). This command is equivalent to selecting Display Setup from the Display menu and then choosing the Appearance tab.

Group

Display Control

Related Commands

DISplay:INTENSITy:WAVEform (see page 124)

Syntax 1

```
DISplay:INTENSITy:AUTOBright {OFF|ON|<NR1>}
```

Syntax 2

```
DISplay:INTENSITy:AUTOBright?
```

Arguments

- `OFF`

  This allows the system to use the manually set waveform intensity value against an absolute scale.

- `ON`

  This allows the system to adjust settings with the user-defined waveform intensity value in concert with the maximum and minimum non-zero acquired pixel intensity.

- `<NR1>`

  A 0 allows the system to use the manually set waveform intensity value against an absolute scale; any other value allows the system to adjust settings.

Example 1

```
DISplay:INTENSITy:AUTOBright ON
```

This command allows the system to adjust settings using the waveform intensity value and the pixel intensity found in the acquired waveform.

Example 2

This query might return `:DISPLAY:INTENSITY:AUTOBRIGHT 1`, indicating that system adjustment of waveform intensity is enabled.

DISplay:INTENSITy:WAVEform

Description

This command sets or queries the intensity saturation of the waveforms. This command is equivalent adjusting the **INTENSITY** knob on the front panel.

Group

Display Control

Related Commands

DISplay:INTENSITy:AUTOBright (see page 123)

Syntax 1

```
DISplay:INTENSITy:WAVEform <NR1>
```

Syntax 2

```
DISplay:INTENSITy:WAVEform?
```

Arguments

- `<NR1>`

  This is the waveform intensity and ranges from 10 to 100 percent.

Example 1

```
DISplay:INTENSITy:WAVEform 100
```

This command sets the waveform intensity to 100 percent.

Example 2

```
DISplay:INTENSITy:WAVEform?
```

This query might return `:DISPLAY:INTENSITY:WAVEFORM 6.0000E+01`, indicating that the intensity of the waveforms is currently set to 60 percent.

DISplay:INTENSITy:SCREENSAVER

Description

This command sets and queries the screen protection features of the underlying MS Windows operating system. When enabled, a delay timer (set in seconds by the DISplay:INTENSITy:SCREENSAVERDELAY command) begins counting down. When this screensaver delay times out, the screen low-power mode engages. This causes the LCD backlight to switch off and clears both waveform and text displays. Any control (front panel, mouse or keyboard) or touch screen activity resets the delay timer and restores normal scope display. This command is equivalent to selecting Screen Saver Enabled from the Display menu.

Group

Display Control

Related Commands

DISplay:INTENSITy:SCREENSAVERDELAY (see page 126)

Syntax 1

```
DISplay:INTENSITy:SCREENSAVER {OFF|ON|<NR1>}
```

Syntax 2

```
DISplay:INTENSITy:SCREENSAVER?
```

Arguments

- `OFF`

  This disables the screen saver feature.

- `ON`

  This enables the protection after the specified screen saver delay seconds of control activity have passed.

- `<NR1>`

  A 0 disables the screensaver feature; a 1 enables the screen saver protection features.

Example 1

```
DISplay:INTENSITy:SCREENSAVER OFF
```

This command disables the screen saver feature.

Example 2

```
DISplay:INTENSITy:SCREENSAVER?
```

This query might return `:DISPLAY:INTENSITy:SCREENSAVER 0`, indicating that the screensaver feature is disabled.

DISplay:INTENSITy:SCREENSAVERDELAY

Description

This command sets or queries the timeout of the screen protection features of the display system. When enabled (after the specified screen saver delay seconds of control activity and when the screensaver feature is enabled) the instrument activates the screensaver feature. Normal scope displays are restored and the delay timer is reset upon any control activity. The oscilloscope continues to acquire and process data normally while in screensaver mode; only the display is disabled. This command is equivalent to selecting Display Setup from the Display menu and then choosing the Objects tab.

Group

Display Control

Related Commands

DISplay:INTENSITy:SCREENSAVER (see page 125)

Syntax 1

```
DISplay:INTENSITy:SCREENSAVERDELAY {<NR1>}
```

Syntax 2

```
DISplay:INTENSITy:SCREENSAVERDELAY?
```

Arguments

- `<NR1>`

  This sets the screensaver timeout, which ranges from 30 through 28800 seconds.

Example 1

```
DISplay:INTENSITy:SCREENSAVERDELAY 120
```

This command sets the screen saver delay feature to activate after 120 seconds of control inactivity.

Example 2

```
DISplay:INTENSITy:SCREENSAVERDELAY?
```

This query might return `:DISPLAY:INTENSITy:SCREENSAVERDELAY 300`, indicating that the screen saver delay feature is set to 300 seconds of control inactivity.

DISplay:PERSistence

Description

This command sets or queries the persistence aspect of the display. This affects the display only and is equivalent to selecting Display Persistence from the Display menu.

Group

Display Control

Related Commands

DISplay:VARPersist (see page 131)

Syntax 1

```
DISplay:PERSistence {OFF|INFPersist|VARPersist}
```

Syntax 2

```
DISplay:PERSistence?
```

Arguments

- `OFF`

  This disables the persistence aspect of the display.

- `INFPersist`

  This sets a display mode where any pixels, once touched by samples, remain set until cleared by a mode change.

- `VARPersist`

  This sets a display mode where set pixels are gradually dimmed.

Example 1

```
DISplay:PERSistence VARPersist
```

This command sets the persistence aspect of the display to fade set pixels according to the time set in the DISplay:VARPersist command.

Example 2

```
DISplay:PERSistence?
```

This query might return `:DISPLAY:PERSISTENCE OFF`, indicating that the persistence aspect of the display is disabled.

DISplay:STYle

Description

This command sets or queries how the data is displayed for normal and FastAcq modes. This command is equivalent to setting Display Style from the Display menu.

Group

Display Control

Syntax 1

```
DISplay:STYle {VECtors|DOTs|INTENSIFied}
```

Syntax 2

```
DISplay:STYle?
```

Arguments

- `VECtors`

  This connects adjacent data points. New points immediately replace old ones.

- `DOTs`

  This displays individual data points. New points immediately replace old ones.

- `INTENSIFied`

  This causes the display to show interpolated samples with dark spaces (Only the "real" samples are displayed).

  When FastAcq mode is enabled, intensified samples display as dots. However, turning off FastAcq mode causes the display style to snap back to its previous setting.

Example 1

```
DISplay:STYle VECtors
```

This command sets the display to connect adjacent data points.

Example 2

```
DISplay:STYle?
```

This query might return `:DISPLAY:STYLE INTENSIFIED`, indicating that interpolated samples are not displayed.

DISplay:TRIGBar

Description

This command controls or queries the display of the trigger-level indicator bar/s. Indicator bars show where the trigger voltage level is set.

The oscilloscope will only display the bar if the associated trigger source is also displayed. If both a main and a delayed trigger are displayed, then two bars will appear. One will accompany each source. If a logic trigger is selected, then multiple bars may appear. One will show the upper threshold and one will show the lower threshold. This command is equivalent to selecting Display Setup from the Display menu and then choosing the Objects tab.

Group

Display Control

Syntax 1

```
DISplay:TRIGBar {OFF|SHORt|LONG}
```

Syntax 2

```
DISplay:TRIGBar?
```

Arguments

- `OFF`

  This removes the trigger indicator bar from the display.

- `SHORt`

  This displays, as the indicator, a short arrow at the right side of the graticule for each displayed trigger signal.

- `LONG`

  This displays, as the indicator, a horizontal line across the width of the graticule for each displayed trigger signal.

Example 1

```
DISplay:TRIGBar LONG
```

This command sets the display to show a long trigger indicator bar (or bars).

Example 2

```
DISplay:TRIGBar?
```

This query might return `:DISPLAY:TRIGBAR OFF`, indicating that the indicator bar is removed from the display.

DISplay:TRIGT

Description

This command controls or queries the display of the trigger point indicator. This is equivalent to selecting Objects from the Display menu. The query form returns an ON (1) or an OFF (0).

Group

Display Control

Syntax 1

```
DISplay:TRIGT {ON|OFF|<NR1>}
```

Syntax 2

```
DISplay:TRIGT?
```

Arguments

- `ON`

  This displays a trigger indicator on each of the displayed waveforms. The trigger indicator is in reverse video for the selected waveform.

- `OFF`

  This removes the trigger indicator from the display.

- `<NR1>`

  A 0 removes the trigger indicator from the display; a 1 displays a trigger indicator on each of the displayed waveforms.

Example 1

```
DISplay:TRIGT ON
```

This command sets the display to show a trigger indicators.

Example 2

```
DISplay:TRIGT?
```

This query might return `:DISPLAY:TRIGT 0`, indicating that the trigger indicator is removed from the display.

DISplay:VARPersist

Description

This command sets or queries persistence decay time, which is the approximate decay time for a freshly struck persistence sample. This command is equivalent to selecting Display Setup from the Display menu, selecting the Appearance tab and then entering the desired Persist Time.

Group

Display Control

Related Commands

DISplay:PERSistence (see page 127)

Syntax 1

```
DISplay:VARPersist <NR3>
```

Syntax 2

```
DISplay:VARPersist?
```

Arguments

- `<NR3>`

  This indicates the persistence decay time setting in numeric seconds. The persistence time ranges from 32 ms to 10 s.

Example 1

```
DISplay:VARPersist 5E-1
```

This command sets the persistence decay time to 500 ms.

Example 2

```
DISplay:VARPersist?
```

This query might return `:DISPLAY:VARPERSIST 5.0000E-01`, indicating that persistence decay time is currently set to 500 ms.