Remarks

- **FFIRst:** starts from the start frame.
- **FEND:** starts from the end frame.

Return Format

N/A

Example

```
:RECord:WREPlay: PLAY FEND /*Sets to play from end frame manually.*/
```

3.20 :REFerence Commands

:REFerence commands are used to set the reference waveform parameters.

This series oscilloscope provides 10 reference waveform positions (Ref1-Ref10). In the actual test process, you can compare the signal waveform with the reference waveform to locate the failure.

3.20.1 :REFerence:SOURce

Syntax

:REFerence:SOURce <*ref*>,<*chan*>

:REFerence:SOURce? <*ref*>

Description

Sets or queries the source of the specified reference channel.

Parameter

Name	Type	Range	Default
<ref>	Discrete	{1|2|3|4|5|6|7|8|9|10}	-
<chan>	Discrete	{D0|D1|D2|D3|D4|D5|D6|D7|D8|D9|D10|D11|D12|D13|D14|D15|CHANnel1|CHANnel2|CHANnel3|CHANnel4|MATH1|MATH2|MATH3|MATH4}	CHANnel1

Remarks

Only the currently enabled channel can be selected as the source of the specified reference channel.

D0-D15 are only available for the DHO900 series.

Return Format

The query returns D0, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, CHAN1, CHAN2, CHAN3, CHAN4, MATH1, MATH2, MATH3, or MATH4.

Example

```
:REFerence:SOURce 1,CHANnel1    /*Sets the source of the reference
channel 1 to CHANnel1.*/
:REFerence:SOURce? 1            /*The query returns CHAN1.*/
```

3.20.2 :REFerence:VSCale

Syntax

:REFerence:VSCale <*ref*>,<*scale*>

:REFerence:VSCale? <*ref*>

Description

Sets or queries the vertical scale of the specified reference channel.

Parameter

Name	Type	Range	Default
<ref>	Discrete	{1|2|3|4|5|6|7|8|9|10}	-
<scale>	Real	Refer to *Remarks*	50mV

Remarks

The range of the parameter <scale> is related to the probe ratio setting.

When the probe ratio is 1X, the value of <scale> ranges from 100 μV to 10 V. When the probe ratio is 10X, the value of <scale> ranges from 1 mV to 100 V.

This command is only available when the reference waveform of the specified reference channel has been saved.

Return Format

The query returns the vertical scale in scientific notation.

Example

```
:REFerence:VSCale 1,2    /*Sets the vertical scale of reference
channel 1 to 2 V.*/
:REFerence:VSCale? 1   /*The query returns 2.000000E0.*/
```

3.20.3 :REFerence:VOFFset

Syntax

:REFerence:VOFFset <*ref*>,<*offset*>

:REFerence:VOFFset? <*ref*>

Description

Sets or queries the vertical position of the specified reference channel.

Parameter

Name	Type	Range	Default
<ref>	Discrete	{1|2|3|4|5|6|7|8|9|10}	-
<offset>	Real	(-10 × RefVerticalScale) to (10 × RefVerticalScale)	0 V

Remarks

RefVerticalScale indicates the vertical scale of the currently set reference channel.

Return Format

The query returns the vertical position in scientific notation.

Example

```
:REFerence:VOFFset 1,0.5    /*Sets the vertical offset of reference
channel 1 to 500 mV.*/
:REFerence:VOFFset? 1   /*The query returns 5.000000E-1.*/
```

3.20.4 :REFerence:RESet

Syntax

:REFerence:RESet <*ref*>

Description

Resets the vertical scale and vertical offset of the specified reference channel to the defaults.

Parameter

Name	Type	Range	Default
<ref>	Discrete	{1|2|3|4|5|6|7|8|9|10}	-

Remarks

N/A

Return Format

N/A

Example

```
N/A
```

3.20.5 :REFerence:CURRent

Syntax

`:REFerence:CURRent` <*ref*>

Description

Sets the current reference channel.

Parameter

Name	Type	Range	Default
<ref>	Discrete	{1|2|3|4|5|6|7|8|9|10}	1

Remarks

N/A

Return Format

N/A

Example

```
N/A
```

3.20.6 :REFerence:SAVE

Syntax

`:REFerence:SAVE` <*ref*>

Description

Saves the waveform of the specified reference channel to the internal memory as the reference waveform.

Parameter

Name	Type	Range	Default
<ref>	Discrete	{1|2|3|4|5|6|7|8|9|10}	-

Remarks

N/A

Return Format

N/A

Example

```
N/A
```

3.20.7 :REFerence:COLor

Syntax

:REFerence:COLor <*ref*>, <*color*>

:REFerence:COLor? <*ref*>

Description

Sets or queries the color of the specified reference channel.

Parameter

Name	Type	Range	Default
<ref>	Discrete	{1|2|3|4|5|6|7|8|9|10}	-
<color>	Discrete	{GRAY|GREen|BLUE|RED|ORANge}	-

Remarks

N/A

Return Format

The query returns GRAY, GRE, BLUE, RED, or ORAN.

Example

```
:REFerence:COLor 1,GREen   /*Sets the display color of the
reference channel 1 to GREen.*/
:REFerence:COLor? 1      /*The query returns GRE.*/
```

3.20.8 :REFerence:LABel:ENABle

Syntax

:REFerence:LABel:ENABle <*bool*>

:REFerence:LABel:ENABle?

Description

Enables or disables the label display of all the reference channels; or queries the on/off label display status of all the reference channels.

Parameter

Name	Type	Range	Default
<bool>	Bool	{{1|ON}|{0|OFF}}	0|OFF