

Reference

Tektronix

**TVS600 & TVS600A Series
Waveform Analyzers**

070-9918-00



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Quick Reference to TVS600 & TVS600A Commands

This manual provides an abbreviated reference to the commands of TVS600 and TVS600A Series Waveform Analyzers. Use this reference to find the correct syntax for the commands. The commands are grouped by subsystem node and listed in alphabetical order.

In general, the term TVS600A includes the TVS600A and the TVS600 models. Some commands apply only to TVS600A models; these commands appear in **bold type**.

Syntax

Commands ending with “?” are queries only. Commands ending with “[?]” have command and query forms. All other commands do not have a query form. Items in brackets [] are optional.

Commands include the argument type for their command form, and their query form when applicable. The types are briefly defined as follows:

- <bin-block> — binary data block
- <boolean> — ON or 1, OFF or 0
- <expression> — algebraic expression
- <hex> — hexadecimal number: #HFF
- <none> — no command argument
- <NRf> — flexible number format: NR1, NR2 or NR3
- <string> — quoted ASCII character string

Commands can also include the argument-type enumerated; for this type, the alternative argument forms are listed as follows:

Form:	Example:
<arg1 arg2 argn>	<BPASs HPASs LPASs NOTCh>
<arg1–argn>	<CHAN1–CHAN4>

Sometimes the forms are combined, for example:

<CHAN1–CHAN4 | AATS | CALC1–CALC4>

which means:

(one of CHAN 1, CHAN 2 , CHAN 3, or CHAN 4) OR
AATS OR (one of CALC1, CALC2, CALC3, or CALC4)

For detailed descriptions of the commands and argument types, refer to your *TVS600 & TVS600A Series Command Reference* manual.

Commands

Some commands in the following list apply only to TVS600A models; these commands appear in **bold type**.

AADVance

Commands in the [SENSE:]AADVance subsystem control how auto-advance acquisition records are acquired and transferred to a VXIbus controller.

AADVance

[:STATe][?] <boolean>

:COUNT[?] <NRf>

:RECORD

:COUNT[?] <NRf>

:START[?] <NRf>

ABORT

This command in the ABORT subsystem operates in combination with the ARM and TRIGGER subsystems to stop signal acquisition.

ABORT <none>

ARM

Commands in the ARM subsystem operate in combination with the TRIGGER, INITIATE, and ABORT subsystems to trigger acquisitions.

ARM[:A]

:DEFine?

[:LAYer[1]]

:SOURce[?] <BUS | ECLTrg0-1 | IECLTrg0-1 | ITTLTrg0-7
| IMMEDIATE | TTLTrg0-7>

AVERage

Commands in the [SENSe:]AVERage subsystem control averaging (on incoming waveforms) in the SENSe block, which occurs prior to processing of the waveforms by the CALCulate block.

AVERage

:STATe[?] <boolean>
:COUNT[?] <NRf>
:TYPE[?] <ENVELOpe | SCALar | **PEAKdetect**>

CALCulate <n>

Commands in the CALCulate subsystem process and perform measurements on acquisition records. These calculations are typically performed immediately after the waveform analyzer completes acquisition of the source. You can use CALCulate:IM-Mediate to reprocess and measure an existing acquisition record.

CALCulate<n>

:AAMLis[?] <see page 22>
:STATe[?] <boolean>
:DATA? <none>
:PREamble? <none>
:DERivative
:STATe[?] <boolean>
:FEED[1][?] <string | CHAN1-CHAN4 | **REF1-REF10**>
:FEED2[?] <string | CHAN1-CHAN4 | **REF1-REF10**>
:CONTEXT
:FILTer
:FREQuency
[:TYPE][?] <BPASs | HPASs | LPASs | NOTCh>
:CENTer[?] <NRf>

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:HPASs[?] <NRf>
:LPASs[?] <NRf>
:SPAN[?] <NRf>
:SREJection[?] <NRf>
:START[?] <NRf>
:STATE[?] <boolean>
:STOP[?] <NRf>
:TWIDth[?] <NRf>
:FORMat[?] <COMPLex | MLINear | MLOGarithmic | NONE
| PHASe | POLar>
:IMMediate[?] <none>
:INTegral
 :STATE[?] <boolean>
:PATH[?] <AAMList | DERivative | FILTer | FORMat | INTegral
| SMOothing | TRANSform1 | WMList>
 :EXPRession[?] <expression>
:SMOothing
 [:STATE[?] <boolean>
 :POINts[?] <NRf>
:TRANSform
 :FREQuency
 :STATE[?] <boolean>
 :WINDow[?] <BHARris | BLACkman | HAMMing
 | HANNing | RECTangular | TRlangular>
:WMList[?] <See page 22>
 :STATE[?] <boolean>
:WMPparameter

:EDGE[?] <NRf>
:GATE[?] <boolean>
 :METhod[?] ABSolute | RELative
 :STARt
 [:ABSolute][?] <NRf>
 :RELative[?] <NRf>
 :STOP
 [:ABSolute][?] <NRf>
 :RELative[?] <NRf>
:HIGH[?] <NRf>
:HMEThod[?] <ABSolute | AUTO | MODE | PEAK>
:LOW[?] <NRf>
:LMEThod[?] <ABSolute | AUTO | MODE | PEAK>
:HREFerence
 [:ABSolute][?] <NRf>
 :RELative[?] <NRf>
:LREFerence
 [:ABSolute][?] <NRf>
 :RELative[?] <NRf>
:MREFerence
 [:ABSolute][?] <NRf>
 :HYSteresis[?] <NRf>
 :RELative[?] <NRf>
:RMEThod[?] <ABSolute | RELative>
:SLOPe[?] <NRf>

CALibration

Commands in the CALibration subsystem run the waveform analyzer self-calibration functions.

CALibration

[:ALL][?] <none>

:RESults

[:CODE][?] <none>

:VERBose? <none>

:PROBe[n][?] <none>

:RESults?

DATA?

Commands in the [SENSe:]FUNctIon and [SENSe:]DATA subsystems control sense functions and provide a means of accessing the data produced by the sense functions.

DATA? <string>

:PREamble? <string>

FORMat

Commands in the FORMat subsystem set the format of acquisition record data and measurement data transferred out of the waveform analyzer. The primary data transfer commands are CALCulate:DATA?, [SENSe:]DATA?, and TRACe[:DATA]?

FORMat

:BORDER[?] <NORMAL | SWAPped>

[:DATA][?] <ASCII,[0] | INTEGER,[16]>

:CALCulate<n>[?] <ASCII,[0] | INTEGER,[16]>

:TRACe

:AATS[?] <ASCII,[0] | REAL,[32]>

:REF[?] <ASCII,[0] | REAL,[32]>

:DINterchange[?] <boolean>

FUNCTION

Commands in the [SENSE:]FUNCTION and [SENSE:]DATA subsystems control sense functions and provide a means of accessing the data produced by the sense functions.

FUNCTION

[:ON][?] <string | CHAN1-CHAN4>

:ALL <none>

:COUNT? <none>

:OFF[?] <string | CHAN1-CHAN4>

:ALL <none>

:COUNT? <none>

:CONCurrent[?] <boolean>

:STATe? <string>, <boolean>

INITiate

Commands in the INITiate subsystem operate in combination with the ARM and TRIGger subsystems to start signal acquisition.

INITiate

[:IMMEDIATE] <none>

:CONTinuous[?] <boolean>

:COUNT[?] <NRf>

INPut<n>

Commands in the INPut subsystem control input coupling, bandwidth limiting, input impedance, and so on. The input channel number, defined at the probe connector, is shared as the parameter <n> for the INPut<n> and VOLTage<n> commands.

INPut<n>

:COUPling[?] <AC | DC | GROund>

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:FILTer
 [:LPASs]
 [:STATe][?] <boolean>
 :FREQuency[?] <NRf>
:IMPedance[?] <NRf>
:**PROBe**
 :**ATTenuation?**
 :**IDENtification?**
 :**OFFSet?**
:PROTection
 :STATe[?] <boolean>

MEMory

Commands in the MEMory subsystem store and retrieve instrument settings. The waveform analyzer can store the current instrument state in any of ten nonvolatile memory locations or in a file on your controller.

MEMory
 :DATA[?] <SAV0–SAV10>
 :NSTATes? <none>
 :STATe
 :CATalog? <none>
 :DEFine? <SAV0–SAV10>

OUTPut

Commands in the OUTPut subsystem route signals to the VXIbus trigger lines and enable the probe compensation signals and reference signals.

OUTPut

```
:ECLTrg<n>
  [:STATE][?] <boolean>
  :POLarity[?] <NORMAL | INVERTed>
  :SOURce[?] <ARMed | ATRigger | BTRigger | CALC
             | OPC>

:PCOMPensate
  [:STATE][?] <boolean>
  FUNCtion[?] <CLOCK | VOLTage>

:REFerence
  [:STATE][?] <boolean>
  :FUNCtion[?] <CLOCK | VOLTage>

:TTLTrg<n>
  [:STATE][?] <boolean>
  :POLarity[?] <NORMAL | INVERTed>
  :SOURce[?] <ARMed | ATRigger | BTRigger | CALC
             | OPC>
```

ROSCillator

Commands in the SENSE:ROSCillator subsystem control the source of the reference oscillator (clock) for the :SWEep subsystem.

ROSCillator

```
:SOURce[?] <CLK10 | INTERNAL>
```

[SENSe:]

Commands in the [SENSe:] system appear in the references that follow:

[SENSe:]

see AADVance

see AVERage

see DATA

see FUNCtion

see ROSCillator

see SWEEp

see VOLTage

STATus

Commands in the STATus subsystem can determine the state of the waveform analyzer and control what events can interrupt the system controller. For an overview of the status and event reporting system, refer to your user manual.

STATus

:OPERation

[:EVENT]? <none>

:CONDition? <none>

:ENABle[?] <NRf>|<hex>

:NTRansition[?] <NRf>|<hex>

:PTRansition[?] <NRf>|<hex>

:QENable

:NTRansition[?] <NRf>|<hex>

:PTRansition[?] <NRf>|<hex>

:PRESet <none>

:QUEStionable
[:EVENT]? <none>
:CONDition? <none>
:ENABle[?] <NRf>|<hex>
:NTRansition[?] <NRf>|<hex>
:PTRansition[?] <NRf>|<hex>
:QENable
 :NTRansition[?] <NRf>|<hex>
 :PTRansition[?] <NRf>|<hex>
:SESR
 :QENable[?] <NRf>|<hex>

SWEEp

Commands in the [SENSE:]SWEEp subsystem control the acquisition time base for all VOLTage[n] acquisitions.

SWEEp
:OFFSet
 :POINts[?] <NRf>
 :TIME[?] <NRf>
:OREFERENCE
 :LOCation[?] <NRf>
:POINts[?] <NRf>
:TIME[?] <NRf>
:TINTErval[?] <NRf>

SYSTEM

Commands in the SYSTEM subsystem program utility functions and return version information about the waveform analyzer.

SYSTEM

:AUToset

:VOLTage <CHAN1-CHAN4>

:SWEep <CHAN1-CHAN4>

:TRIGger <CHAN1-CHAN4>

:BDATe[?] <NRf>, <NRf>, <NRf>

:CDATe[?] <NRf>, <NRf>, <NRf>

:COMMunicate

:SERial

:BAUD[?] <NRf>

:CONTRol

:DCD[?] <boolean>

:RTS[?] <OFF | ON | IBFull | RFR>

:ECHO[?] <boolean>

:ERESponse[?] <boolean>

:LBUFFer[?] <boolean>

:PACE[?] <NONE | XON>

:PARity[?] <EVEN | NONE | ODD>

:PRESet

[:ALL] <none>

:RAW <none>

:TERMinal <none>

:SBITS[?] <NRf>

:ERRor
[:NEXT]? <none>
:ALL? <none>
:CODE
[:NEXT]? <none>
:ALL? <none>
:COUNT? <none>
:PROtect[?] <boolean>
:SECurity
:IMMediate <none>
:SET[?] <bin-block>
:VERsion? <none>

TEST

Commands in the TEST subsystem execute the internal self-tests of the waveform analyzer module and return the pass or fail status.

TEST
[:ALL][?] <none>
:RESults
[:CODE]? <none>
:VERBose? <none>
:STOP

TRACe?

Commands in the Trace subsystem transfer acquisition records or measurement results and their data preambles from the waveform analyzer to the VXIbus controller or to internal REF storage locations. (The data preamble includes scaling and length information for the associated data record.) See the FORMAT subsystem for setting the format for data transfers.

The query does not return data until pending acquisitions or calculations complete. Hence, the synchronizing commands *WAI, *OPC, and *OPC? are not required.

TRACe?

```
[ :DATA ] ?  
< CHAN1-CHAN4 | AATS | CALC1-CALC4 | REF1-REF10 >  
:PREamble? < CHAN1-CHAN4 | AATS | CALC1-CALC4  
| REF1-REF10 >
```

:DELeTe

```
[ :NAME ] < REF1-REF10 >
```

TRACe:DELeTe:ALL

:CATalog? < none >

```
:COPY < FDC1 | REF1-REF10 > , CHAN1-CHAN4 | AATS  
| CALC1-CALC4 | LIST | REF1-REF10 >
```

```
:FEED? < CHAN1-CHAN4 | REF1-REF10 | AATS  
| CALC1-CALC4 >
```

```
:LIST[?] < CHAN1-CHAN4 | REF1-REF10 | AATS  
| CALC1-CALC4 | NONE >
```

```
:POINTS? < CHAN1-CHAN4 | REF1-REF10 | AATS  
| CALC1-CALC4 >
```

TRIGger[:A]

Commands in the TRIGger[:A] subsystem operate in combination with the ARM, INITiate, TRIGger:B and ABORt subsystems to trigger acquisitions. The defined alias for the SCPI trigger :SEQUence[1] is A.

```
TRIGger
  [:A]
    :ATRigger
      [:STATe][?] <boolean>
    :COUPling[?]AC | DC
      :<preset>
    :DEFine? <none>
    :DELay[?] <NRf>
    :FILTer
      [:LPASs]
        [:LPASs]
        [:STATe][?] <boolean>
      :HPASs
        [:STATe][?] <boolean>
    :NREJect[?]
      [:STATe][?] <boolean>
    :HOLDoff
      :TIME[?] <NRf>
    :LEVel[?] <NRf>
    :METastable:STATe[?] <REJect | ACcept| AUto>
    :SLOPe[?] <POSitive | NEGative>
```

```
:SOURce[?] <ECLTrg0 | ECLTrg1 | EXTernal | IMMEDIATE  
| INTernal1-INTernal4 | TTLTrg0-TTLTrg7>  
:TYPE[?]  
<EDGE | LOGic | PULSe | SHOLdtime | TRANSition>
```

TRIGger[:A]:PULSe

Commands in the TRIGger:PULSe subsystem provide the capability to trigger when a pulse occurs that is outside specified parameters.

```
TRIGger  
[:A]  
:PULSe  
:CLASs[?] <GLITch | TIME | WIDTh>  
:GLITch  
:POLarity[?] <EITHer | NEGative | POSitive>  
:QUALify[?] <GT | LT>  
:WIDTh[?] <NRf>  
:SOURce[?] <INTernal1-INTernal4>  
:TIMEout  
:POLarity[?]<NEGative | POSitive>  
:WIDTh[?] <NRf>  
:THReshold[?] <NRf>  
:WIDTh  
:HLIMit[?] <NRf>  
:LLIMit[?] <NRf>  
:POLarity[?] <NEGative | POSitive>  
:QUALify[?] <IN | OUT>
```

TRIGger[:A]:LOGic

Commands in the TRIGger:LOGic subsystem provide the capability to trigger on logic patterns, clocked or not clocked. TVS600A models only.

```
TRIGger
[:A]
:LOGic
:CLASs[?] <PATTerm | STATE>
:CONDition[?] <LCXXX0 | LCXXX1 | ... | LC1111>
:FUNCTion[?] <AND | NAND | NOR | OR>
:PATtern
:QUALify[?] <GT | LT | OFF>
:WIDTh[?] <NRf>
:STATe
:SLOPe[?] <NEGative | POSitive>
:THReshold[n][?] <NRf>
```

TRIGger[:A]:SHOLdtime

Commands in the TRIGger:SHOLdtime (setup and hold) subsystem provide the capability to monitor and trigger on data that violates a setup-and-hold time zone that you set. TVS600A models only.

```
TRIGger
[:A]
:SHOLdtime
:CLOCK
:POLarity[?] <NEGative | POSitive>
:SOURce[?] <INTernal1-INTernal4>
:THReshold[?] <NRf | MAXimum | MINimum>
```

:DATA

:SOURCE[?] <INTERNAL1–INTERNAL4>

:THRESHOLD[?] <NRf | MAXimum | MINimum>

:HTIME[?] <NRf | MAXimum | MINimum>

:STIME[?] <NRf | MAXimum | MINimum>

TRIGGER[:A]:TRANSITION

Commands in the TRIGGER TRANSITION subsystem provide the capability to trigger on runt pulses or to trigger based on the slew rate of a pulses edge. TVS600A models only.

TRIGGER

[A]

:TRANSITION

:CLASS[?] <RUNT | SLEW>

:RUNT

:QUALIFY[?] <GT | OFF>

:SLOPE[?] <EITHER | NEGative | POSitive>

:SLEW

:QUALIFY[?] <GT | LT>

:SLOPE[?] <NEGative | POSitive>

:SOURCE[?] <INTERNAL1–INTERNAL4>

:THRESHOLD

:HIGH[?] <NRf>

:LOW[?] <NRf>

:TIME[?] <NRf>

TRIGger:B

Commands in the TRIGger:B subsystem operate in combination with the ARM, INITiate, TRIGger[:A] and ABORt subsystems to trigger acquisitions. The TRIGger:B subsystem is an alias for the SCPI SEQUENCE2 trigger block. The defined alias for the SCPI trigger :SEQUENCE[2] is :B.

```
TRIGger
  :B
    :COUPling[?] <AC | DC>
      :<preset>
    :DELay[?] <NRf>
    :ECOunt[?] <NRf>
    :FILTer
      [:LPASs]
        [:STATe][?] <boolean>
      :HPASs
        [:STATe][?] <boolean>
    :NREJect[?]
      [:STATe][?] <boolean>
    :LEVel[?] <NRf>
    :SEQuence2
      :DEFine? <none>
    :SLOPe[?] <NEGative | POSitive>
    :SOURce[?] <EXTernal | IMMEDIATE | INTernal1
      -INTernal4>
```

VOLTage<n>

This command ([SENSe:]VOLTage subsystem) sets the vertical window size for input channel specified by <n>. The input channel number, defined at the probe connector, is shared as the parameter <n> for the INPut<n> and VOLTage<n> commands.

```
VOLTage<n>
  [:DC]
  :RANGe
  [:UPPer][?] <NRf>
  :LOWer[?] <NRf>
  :OFFSet[?] <NRf>
  :PTPeak[?] <NRf>
```

IEEE 488.2 Common Commands

The program mnemonics are described in alphabetical order below.

*CAL?	*LRN?	*RST	*TST?
*CLS	*OPC[?]	*SAV	*WAI?
*ESE[?]	*OPT?	*SRE[?]	
*ESR?	*PUD[?]	*STB?	
*IDN?	*RCL	*TRG	

AAMList and WMList Parameters

The table that follows lists the measurements available as arguments to the CALCulate<n>:AAMList[?] and :WMList[?] (see pages 4 and 5, respectively).

<list>	
AMPLitude	MINimum
AREA	NCRoss
CARea	NDUTyCycle
CMEan	NWIDth
COPulse ¹	OVERshoot ¹
CPARea ¹	PARea ¹
CRMS	PCRoss
CROSSs	PERiod
DELay	PDUTyCycle
FREQuency	PHAsE
FTIME	PREShoot ¹
GAIN	PTPeak
HIGH	PWIDth
LOW	RMS AC
MAXimum	RTIME
MEAN DC	SDEViation
MID	TTRig

¹ TVS600A only

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