



# Programmable Interface Changes

## Between Tektronix DSA8200 and DSA8300 Sampling Oscilloscopes

Summary of changes to the Programmable Interface (PI). Comments on GPIB and TekVisa Plug and Play (PnP):

### Contents

<b>Programmable Interface Changes Introduction</b> .....	1
<b>Plug and Play (PnP)</b> .....	1
<b>IVI Driver</b> .....	1
<b>Additional Resources</b> .....	1
<b>Attachments:</b>	
<b>Table 1. List of Changes to Plug and Play, with PI Commands</b> .....	2
<b>Table 2. List of PI Commands added to the DSA8300</b> .....	19
<b>Table 3. List of PI Commands Not Included with DSA8300</b> .....	20
<b>Table 4. List of PI Commands Modified in DSA8300</b> .....	20

### DSA8300 Programmable Interface Changes Introduction

Tektronix 8000 series programmable interface (PI, GPIB, TekVisa, Plug and Play PnP) is an extension of the PI developed for the original CSA8000/TDS8000 Sampling oscilloscopes in the end of 1990s. The latest step in this extension is the PI for the DSA8300.

There has been significant new developments in the high speed oscilloscope measurements, and in the world of high speed serial data measurements in particular. To accommodate these changes the new DSA8300 Tektronix Equivalent Time Sampling Oscilloscope implements several significant changes to basic oscilloscope operation. Some of these changes modify the behavior of the programmable interface (PI).

This document summarizes the changes of the programmable interface, so as to aid the users of older Tek 8000 Sampling oscilloscopes, as well as users of other sampling oscilloscopes that do not implement some latest sampling oscilloscope acquisition methods and modes.

- **Plug and Play (PnP) comments**  
DSA8300 implements a new PnP driver. The name of the driver is "tkdsa83".
- **IVI driver**  
IVI driver is not currently available for Tektronix Sampling oscilloscopes.

### Additional Resources

- DSA8300 User Manual: For details on general oscilloscope behavior.
- DSA8300 Programmer Manual: For details on programmable commands and the most up-to-date document.
- 80SJNB User Manual: For details on programmable commands of oscilloscope applications, such as 80SJNB Jitter, Noise and BER application.



## Table 1. List of Changes to Plug and Play, with PI Commands

Action	Explanation	Information/From	To	PI command
Replace	Only one product is supported	#define tktds8k_PROD_ID1 "TEKTRONIX,TDS/CSA8000" #define tktds8k_PROD_ID2 "TEKTRONIX,TDS8000" #define tktds8k_PROD_ID3 "TEKTRONIX,CSA8000" #define tktds8k_PROD_ID4 "TEKTRONIX,TDS8200" #define tktds8k_PROD_ID5 "TEKTRONIX,CSA8200" #define tktds8k_PROD_ID6 "TEKTRONIX,DSA8200"	#define tkdsa83_PROD_ID1 "TEKTRONIX,DSA8300"	
Add	New, longer record lengths are supported		#define tkdsa83_HORZ_RECLEN_8000 (8000L) #define tkdsa83_HORZ_RECLEN_16000 (16000L)	
Delete	Trigger Mode obsolete, use Free Run in place of AUTO.	static ViStringTrigMode[2] = {"AUTO", "NORMAL"};		
Add	New Acquisition mode. Use Eye or Pattern for serial data.		static ViStringScopeMode[3] = {"EYE", "PATTERN", "OTHER"};	
Add	New Display Scale commands.		static ViStringDisplayScale[2] = {"PERDIVISION", "PERSCREEN"};	
Change	Changes to the Trigger Source selections.	static ViStringTrigSource[4] = {"EXTDIRECT", "EXTPRESCALER", "INTCLK", "CLKRECOVERY"};	static ViStringTrigSource[6] = {"FREERUN", "EXTDIRECT", "EXTPRESCALER", "TDR", "C1CLKRECOVERY", "C3CLKRECOVERY"};	
Delete	Pattern Sync module (80A06) functionality has been absorbed into the mainframe and the Pattern mode.	static ViStringSyncSource[9] = {"CH1", "CH2", "CH3", "CH4", "CH5", "CH6", "CH7", "CH8", "TRIGPROBE"};		
Change	Timebase mode now to only work with TDR. Short term timebase mode obsolete and removed.	static ViStringVertTBMMode[3] = {"SHORTTERM", "LOCKEXT", "LOCKINT"};	static ViString TDR10MHzMode[3] = {"LOCKEXT", "LOCKINT"};	
Change	This function needs to use the *OPT? command and search the returned string for "Advanced Trigger". "Advanced Trigger" in the string indicates the pattern sync capability is enabled.	ViBoolean tktds8k_PSyncAvail(ViSessioninstrumentHandle)		
Delete	This function no longer needed, only one pattern sync capability in the mainframe.	ViBoolean tktds8k_PSyncSourceValid(ViSessioninstrumentHandle, ViInt32 chan)		

**Table 1. List of Changes to Plug and Play, with PI Commands**

Action	Explanation	Information/From	To	PI command
Delete	Timebase mode is no longer available.	tktds8k_SetHorizontalTimebaseMode tktds8k_GetHorizontalTimebaseMode		HORizontal:TBMMode
Add	These functions set horizontal parameters in bits instead of time. They use these new commands that only apply to the main timebase.		ViStatus_VI_FUNC tkdsa83_SetHorizontalMainBitsScale ( ViSessionInstrumentHandle, ViReal64 horizontalBitsScale ) ViStatus_VI_FUNC tkdsa83_SetHorizontalMainBitsPosition ( ViSessionInstrumentHandle, ViReal64 horizontalBitsPosition ) ViStatus_VI_FUNC tkdsa83_GetHorizontalMainBitsScale ( ViSessionInstrumentHandle, ViReal64 *horizontalBitsScale ) ViStatus_VI_FUNC tkdsa83_GetHorizontalMainBitsPosition ( ViSessionInstrumentHandle, ViReal64 *horizontalBitsPosition )	HORizontal:MAIn:BITS:SCALE<nr3 > HORizontal:MAIn:BITS:POSITION<nr3>
Add	Support for longer record lengths added to these function. Length of 20 no longer supported.		ViStatus_VI_FUNC tkdsa83_SetHorizontalRecordLength ( ViSessionInstrumentHandle, ViInt32 timebaseSelector, ViInt32 recordLength ) ViStatus_VI_FUNC tkdsa83_GetHorizontalRecordLength ( ViSessionInstrumentHandle, ViInt32 timebaseSelector, ViInt32 *recordLength )	HORizontal:MAIn:RECORDlength {50   100   250   500   1000   2000   4000   8000   16000} HORizontal:MAG1:RECORDlength {50   100   250   500   1000   2000   4000} HORizontal:MAG2:RECORDlength {50   100   250   500   1000   2000   4000}
Delete	This capability is no longer supported.	ViStatus_VI_FUNC tktds8k_GetFrameScanStartBit ( ViSessionInstrumentHandle, ViReal64 *startBit )		HORizontal:FRAMEScan:STARTBit <nr3>
Modify	Remove the startBit parameter (no longer supported).	ViStatus_VI_FUNC tktds8k_SetFrameScanAcquisition ( ViSessionInstrumentHandle, ViInt32 autoPosition, ViInt32 mode, ViReal64 startBit, ViReal64 scanBits )	ViStatus_VI_FUNC tkdsa83_SetFrameScanAcquisition ( ViSessionInstrumentHandle, ViInt32 mode, ViReal64 scanBits )	

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Action	Explanation	Information/From	To	PI command
Replace	External 10MHz reference now only used with TDR. The new functions will use the new command TDR:EXT10MHZref:FREQ.	ViStatus_VI_FUNC tktds8k_SetExt10MHZRefFrequency (ViSessioninstrumentHandle, ViReal64 frequency) ViStatus_VI_FUNC tktds8k_GetExt10MHZRefFrequency (ViSessioninstrumentHandle, ViReal64 *frequency)	ViStatus_VI_FUNC tkds83_SetTDRExt10MHZRefFrequency (ViSessioninstrumentHandle, ViReal64 frequency) ViStatus_VI_FUNC tkds83_GetTDRExt10MHZRefFrequency (ViSessioninstrumentHandle, ViReal64 *frequency)	Old: Horizontal:EXT10MHZref:FREQ <n>3 New: TDR:EXT10MHZref:FREQ
Modify	Now to be only used with TDR. The new functions will use the new command TDR:REF10Mhz {LOCKInt   LOCKExt}.		ViStatus_VI_FUNC tkds83_SetTDRRef10MHzMode (ViSessioninstrumentHandle, ViInt32 ref10MHzMode) ViStatus_VI_FUNC tkds83_GetTDRRef10MHzMode (ViSessioninstrumentHandle, ViInt32 *ref10MHzMode)	Old: HorizontalTBMMode {SHORTTerm   LOCKExt   LOCKInt} New: TDR:CH<x>:REF10Mhz {LOCKExt   LOCKInt}
Modify	Change this function to use the new Trigger Mode parameter (Eye, Pattern or Other).	ViStatus_VI_FUNC tktds8k_SetExtDirectTriggerParameters (ViSessioninstrumentHandle, ViInt32 mode, ViReal64 holdOff, ViInt32 slope, ViInt32 user50PctlevelSelector, ViReal64 userDefinedLevel)	ViStatus_VI_FUNC tkds83_SetExtDirectTriggerParameters (ViSessioninstrumentHandle, ViReal64 holdOff, ViInt32 slope, ViInt32 user50PctlevelSelector, ViReal64 userDefinedLevel)	
Modify	This function to use the new Trigger Source parameters and the mainframe pattern sync capability.	ViStatus_VI_FUNC tktds8k_SetTriggerSource (ViSessioninstrumentHandle, ViInt32 source)	ViStatus_VI_FUNC tkds83_SetTriggerMode (ViSessioninstrumentHandle, ViInt32 mode) ViStatus_VI_FUNC tkds83_GetTriggerSource (ViSessioninstrumentHandle, ViChartriggerSource[])	New: TRIGger:SOURCE {FRerun   EXTDirect   TDR   EXTPrescaler   C1CLKRec   C3CLKRec}
Modify	Modification of this function to use the new Trigger Mode parameters.	ViStatus_VI_FUNC tktds8k_SetTriggerMode (ViSessioninstrumentHandle, ViInt32 mode)	ViStatus_VI_FUNC tkds83_SetTriggerMode (ViSessioninstrumentHandle, ViInt32 mode) ViStatus_VI_FUNC tkds83_GetTriggerMode (ViSessioninstrumentHandle, ViInt32 *mode)	
Modify	Removed the Mode parameter.	ViStatus_VI_FUNC tktds8k_SetExternalPrescalarParameters (ViSessioninstrumentHandle, ViInt32 mode, ViReal64 holdOff)	ViStatus_VI_FUNC tkds83_SetExternalPrescalarParameters (ViSessioninstrumentHandle, ViReal64 holdOff)	New: TRIGger:MODE {OTHER   EYE   Pattern}

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Action	Explanation	Information/From	To	PI command
Delete	Internal clock is being replace with TDR as a Trigger Source.	ViStatus_VI_FUNC tktds8k_SetIntClockTriggerParameters (ViSessioninstrumentHandle, ViInt32 internalClockRate)		
Change	Changed this function to use the new Trigger Source parameters.	ViStatus_VI_FUNC tktds8k_SetClockRecoveryParameters (ViSessioninstrumentHandle, ViInt32 clockRecoverySource, ViInt32 clockRecoveryValue)	ViStatus_VI_FUNC tkdsa83_SetClockRecoveryParameters (ViSessioninstrumentHandle, ViInt32 clockRecoverySource, ViInt32, scopeMode, ViInt32 clockRecoveryValue)	New: TRIGGER:SOURCE {FREerun   EXTDirect   TDR   EXTPrescaler   C1CLKRec   C3CLKRec} New TRIGGER:MODE {EYE   PATtern   OTHER}
Change	Changed this function to use the new Trigger Source parameters.	ViStatus_VI_FUNC tktds8k_SetClockRecoveryUserValue (ViSessioninstrumentHandle, ViInt32 clockRecoverySource, ViReal64 userValue)	ViStatus_VI_FUNC tkdsa83_SetClockRecoveryUserValue (ViSessioninstrumentHandle, ViInt32 clockRecoverySource, ViReal64 userValue)	New: TRIGGER:SOURCE {FREerun   EXTDirect   TDR   EXTPrescaler   C1CLKRec   C3CLKRec}
Delete	This function is no longer needed, thus not supported.	ViStatus_VI_FUNC tktds8k_SetMetastabilityReject (ViSessioninstrumentHandle, ViInt32 metaReject)		Deleted: TRIGGER:METAReject {ON   OFF}
Delete	This function is no longer supported.	ViStatus_VI_FUNC tktds8k_SetGatedTriggerState (ViSessioninstrumentHandle, ViInt32 state)		Deleted: TRIGGER:GATED {ON OFF}
Modify	Removed the PSyncSource parameter - functionality absorbed into the mainframe.	ViStatus_VI_FUNC tktds8k_SetPSyncTriggerParameters (ViSessioninstrumentHandle, ViInt32 PSyncSource, ViReal64 dataRate, ViInt32 patternLength, ViInt32 data, ViInt32 clock)	ViStatus_VI_FUNC tkdsa83_SetPSyncTriggerParameters (ViSessioninstrumentHandle, ViReal64 dataRate, ViInt32 patternLength, ViInt32 data, ViInt32 clock)	Deleted: TRIGGER:PSYNc:SOURCE
Delete	This function is no longer supported.	ViStatus_VI_FUNC tktds8k_SetPSyncSource (ViSessioninstrumentHandle, ViInt32 PSyncSource)		Deleted: TRIGGER:PSYNc:SOURCE
Modify	Removed the PSyncSource parameter - functionality absorbed into the mainframe.	ViStatus_VI_FUNC tktds8k_SetPSyncDataRate (ViSessioninstrumentHandle, ViInt32 PSyncSource, ViReal64 dataRate)	ViStatus_VI_FUNC tkdsa83_SetPSyncDataRate (ViSessioninstrumentHandle, ViReal64 dataRate) ViStatus_VI_FUNC tkdsa83_GetPSyncDataRate (ViSessioninstrumentHandle, ViReal64 *dataRate)	Deleted: TRIGGER:PSYNc:SOURCE

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Action	Explanation	Information/From	To	PI command
Modify	Removed the PSyncSource parameter - functionality absorbed into the mainframe.	ViStatus_VI_FUNC tktds8k_SetPSyncPatternLength (ViSessionInstrumentHandle, ViInt32 PSyncSource, ViInt32 patternLength)	ViStatus_VI_FUNC tkds83_SetPSyncPatternLength(ViSessionInstrumentHandle, ViReal64 dataRate) ViStatus_VI_FUNC tkds83_GetPSyncPatternLength (ViSessionInstrumentHandle, ViReal64 *dataRate)	Deleted: TRIGGER:PSync:SOURCE
Modify	Remove the PSyncSource parameter - functionality absorbed into the mainframe.	ViStatus_VI_FUNC tktds8k_SetPSyncDataClockRatio (ViSessionInstrumentHandle, ViInt32 PSyncSource, ViInt32 data, ViInt32 clock)	ViStatus_VI_FUNC tkds83_SetPSyncDataClockRatio (ViSessionInstrumentHandle, ViInt32 data, ViInt32 clock) ViStatus_VI_FUNC tkds83_GetPSyncDataClockRatio (ViSessionInstrumentHandle, ViInt32 *data, ViInt32 *clock)	Deleted: TRIGGER:PSync:SOURCE
Delete	This function is no longer supported.	ViStatus_VI_FUNC tktds8k_SetPSyncRelativeTrigger (ViSessionInstrumentHandle, ViInt32 relativeBit)		Deleted: TRIGGER:PSync:RBIT
Delete	This function is replaced with the GetTDRIntRate.	ViStatus_VI_FUNC tktds8k_GetTriggerInternalClockRate (ViSessionInstrumentHandle, ViReal64 *internalClockRate)		Deleted: TRIGGER:INTRate
Modify	Modify this function to use the new Trigger Source parameters for clock recovery.	ViStatus_VI_FUNC tktds8k_GetClockRecoveryParameters (ViSessionInstrumentHandle, ViInt32 *clockRecoveryValue, ViCharclockRecoveryList[], ViInt32 *clockRecoverySource)	ViStatus_VI_FUNC tkds83_GetClockRecoveryParameters (ViSessionInstrumentHandle, ViInt32 *clockRecoverySource, ViInt32 *scopeMode, ViInt32 *clockRecoveryValue) ViInt32 *scopeMode, ViInt32 *clockRecoveryValue)	ViStatus_VI_FUNC tkds83_GetClockRecoveryParameters (ViSessionInstrumentHandle, ViInt32 *clockRecoverySource, ViInt32 *scopeMode, ViInt32 *clockRecoveryValue) ViInt32 *scopeMode, ViInt32 *clockRecoveryValue)
Delete	This function is no longer supported.	ViStatus_VI_FUNC tktds8k_GetMetastabilityReject (ViSessionInstrumentHandle, ViInt32 *metaReject)		Deleted: TRIGGER:METAReject {ON   OFF}
Delete	This function is no longer supported.	ViStatus_VI_FUNC tktds8k_GetGatedTriggerState (ViSessionInstrumentHandle, ViInt32 *state)		Deleted: TRIGGER:GATED

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Action	Explanation	Information/From	To	PI command
Modify	Remove the PSyncSource parameter - functionality absorbed into the mainframe.	ViStatus_VI_FUNC tktds8k_GetPSyncTriggerParameters (ViSessioninstrumentHandle, ViInt32 *PSyncSource, ViReal64 *dataRate, ViInt32 *patternLength, ViInt32 *data, ViInt32 *clock, ViInt32 *relativeBit)	ViStatus_VI_FUNC tkds83_GetPSyncTriggerParameters (ViSessioninstrumentHandle, ViReal64 *dataRate, ViInt32 *patternLength, ViInt32 *data, ViInt32 *clock, ViInt32 *relativeBit)	Deleted: TRIGGER:PSYNc:SOUrce
Delete	This function is no longer supported.	ViStatus_VI_FUNC tkds83_GetPSyncSource (ViSessioninstrumentHandle, ViInt32 *PSyncSource)		Deleted: TRIGGER:PSYNc:SOUrce
Modify	Remove the PSyncSource parameter - functionality absorbed into the mainframe.	ViStatus_VI_FUNC tktds8k_GetPSyncDataRate (ViSessioninstrumentHandle, ViInt32 PSyncSource, ViReal64 *dataRate )	ViStatus_VI_FUNC tkds83_GetPSyncDataRate (ViSessioninstrumentHandle, ViReal64 *dataRate )	Deleted: TRIGGER:PSYNc:SOUrce
Delete	This function is no longer supported.	ViStatus_VI_FUNC tkds83_GetPSyncRelativeTrigger (ViSessioninstrumentHandle, ViInt32 *relativeBit)		Deleted: TRIGGER:PSYNc:RBIT
Add	New functions for a new command.		ViStatus_VI_FUNC tkds83_GetHorizontalDisplayScaleSeconds (ViSessioninstrumentHandle, ViInt32 *displayScale) ViStatus_VI_FUNC tkds83_SetHorizontalDisplayScaleSeconds (ViSessioninstrumentHandle, ViInt32 displayScale)	HORIZONTAL:DISPLayscale:SECONDS {PERDivision   PERScreen}
Add	New functions for a new command.		ViStatus_VI_FUNC tkds83_GetHorizontalDisplayScaleBits (ViSessioninstrumentHandle, ViInt32 *displayScale) ViStatus_VI_FUNC tkds83_SetHorizontalDisplayScaleBits (ViSessioninstrumentHandle, ViInt32 displayScale)	HORIZONTAL:DISPLayscale:BITS {PERDivision   PERScreen}

**Table 1. List of Changes to Plug and Play, with PI Commands**

Action	Explanation	Information/From	To	PI command
Add	New functions for a new command.		ViStatus_VI_FUNC tkdsa83_GetHorizontalDisplayScaleDistance (ViSessioninstrumentHandle, ViInt32 *displayScale) ViStatus_VI_FUNC tkdsa83_SetHorizontalDisplayScaleDistance(ViSessioni nstrumentHandle, ViInt32 displayScale)	Horizontal:DISplayscale:DISTan ce (PERDivision   PERScreen)
Add	New functions for a new command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryEqualizer(ViSessioninstru mentHandle, ViInt32 *Equalizer) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryEqualizer(ViSessioninstru mentHandle, ViInt32 *Equalizer)	TRIGGER:CLKRec:CRc:EQualizer [0-10]
Add	New functions for a new command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryModelNumber(ViSessionins trumentHandle, ViChar *ModelNumber)	TRIGGER:CLKRec:CRc:MODEInum ?
Add	New functions for a new command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryCapabilities(ViSessioninstru mentHandle, ViInt *Capabilities)	TRIGGER:CLKRec:CRc:CAPabilities ?
Add	New functions for a new command.		ViStatus_VI_FUNC tkdsa83_SetClockRecoveryLockFrontPanel(ViSessionins trumentHandle) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryUnLockFrontPanel(ViSession instrumentHandle)	TRIGGER:CLKRec:CRc:LOCKFp [ON   OFF]
Add	New functions for a new command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryHalfRate(ViSessioninstru mentHandle, ViInt *HalfRate)	TRIGGER:CLKRec:CRc:HALFRate?



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Action	Explanation	Information/From	To	PI command
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryAutosetConfig(ViSessionInstrumentHandle, ViInt * configDev) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryAutosetConfig(ViSessionInstrumentHandle, ViInt configDev)	TRIGGER:CLKRec:CRC:AUTOSConfigdv [ON   OFF]
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryClockAmplitude(ViSessionInstrumentHandle, ViReal64 *amplitude) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryClockAmplitude(ViSessionInstrumentHandle, ViReal64 amplitude)	TRIGGER:CLKRec:CRC:CLOCKAmplitude<NR3>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryClockOutput(ViSessionInstrumentHandle, ViInt * output) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryClockOutput(ViSessionInstrumentHandle, ViInt output)	TRIGGER:CLKRec:CRC:CLOCKOutput [ON   OFF]
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_SetClockRecoveryCreateTestStandard(ViSessionInstrumentHandle, ViChar *standardName)	TRIGGER:CLKRec:CRC:CREATESTandard<Qstring>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryDataRate(ViSessionInstrumentHandle, ViReal64 *dataRate)	TRIGGER:CLKRec:CRC:DATARate?
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_SetClockRecoveryDeletesStandard(ViSessionInstrumentHandle, ViChar *standardName)	TRIGGER:CLKRec:CRC:DELETESTandard<Qstring>

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Action	Explanation	Information/From	To	PI command
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryDeviceName (ViSessioninstrumentHandle, ViChar *deviceName) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryDeviceName (ViSessioninstrumentHandle, ViChar *deviceName)	TRIGGER:CLKRec:CRC:DEVICENAME<Qstring>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryEdgeDensity(ViSessioninstrumentHandle, ViReal64 *edgeDensity)	TRIGGER:CLKRec:CRC:EDGEDensity?
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryEdgeDensityMode(ViSessioninstrumentHandle, ViInt32 *edgeDensityMode) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryEdgeDensityMode(ViSessioninstrumentHandle, ViInt32 edgeDensityMode)	TRIGGER:CLKRec:CRC:EDGEDENSITYMode [NOMinal   ON_Lock]
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryExpansionBoardRev(ViSessioninstrumentHandle, ViChar *revision)	TRIGGER:CLKRec:CRC:EXPRev?
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryFPGARev(ViSessioninstrumentHandle, ViChar *revision)	TRIGGER:CLKRec:CRC:FPGArev?
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryHardwareRev(ViSessioninstrumentHandle, ViChar *revision)	TRIGGER:CLKRec:CRC:HWRev?
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryLockMode(ViSessioninstrumentHandle, ViInt32 *lockMode) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryLockMode(ViSessioninstrumentHandle, ViInt32 lockMode)	TRIGGER:CLKRec:CRC:LOCKMode [MANual   AUTOMATIC]

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Action	Explanation	Information/From	To	PI command
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryLockRange(ViSessioninstru mentHandle, ViReal64 *lockRange) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryLockRange(ViSessioninstru mentHandle, ViReal64 lockRange)	TRIGGER:CLKRec:CR:LOCKRange <NR3>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryLockState(ViSessioninstru mentHandle, VInt32 *lockState)	TRIGGER:CLKRec:CR:LOCKState [UNILocked   ACQuiringlock   LOCKed   HIGHJitter]
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryLoopBandwidth(ViSessionin strumentHandle, ViReal64 *loopBandwidth) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryLoopBandwidth(ViSessionin strumentHandle, ViReal64 loopBandwidth)	TRIGGER:CLKRec:CR:LOOPBand width<NR3>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryNominalEdgeDensity(ViSessi onInstrumentHandle, ViReal64 *nominalEdgeDensity) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryNominalEdgeDensity(ViSessi onInstrumentHandle, ViReal64 nominalEdgeDensity)	TRIGGER:CLKRec:CR:NOMEdged ensity<NR3>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryNominalFrequency(ViSessio ninstrumentHandle, ViReal64 *nominalFrequency) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryNominalFrequency(ViSessio ninstrumentHandle, ViReal64 nominalFrequency)	TRIGGER:CLKRec:CR:NOMFrequ ency<NR3>

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Action	Explanation	Information/From	To	PI command
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryPeakRange(ViSessioninstru mentHandle, ViReal64 *peakRange) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryPeakRange(ViSessioninstru mentHandle, ViReal64 peakRange)	TRIGGER:CLKRec:CR:PEAKING<N R3>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryPhaseErrorLimit(ViSessionin strumentHandle, ViReal64 *phaseErrorLimit) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryPhaseErrorLimit (ViSessioninstrumentHandle, ViReal64 phaseErrorLimit)	TRIGGER:CLKRec:CR:PHASEERRLI mit<NR3>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryPhaseErrorPeakToPeak(ViS essionInstrumentHandle, ViReal64 *phaseErrorPeakToPeak)	TRIGGER:CLKRec:CR:PHASEERRR MS?
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_SetClockRecoveryRestoreConfiguration(ViSess ionInstrumentHandle, ViInt32 *configuration)	TRIGGER:CLKRec:CR:RCONFIDev ice [POWER_ON   SETUP_1   SETUP_2   SETUP_3   SETUP_4   FACTORY]
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_SetClockRecoveryRelock(ViSessioninstrum entHandle)	TRIGGER:CLKRec:CR:RELOCK
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_SetClockRecoveryResetLockCount(ViSessionin strumentHandle)	TRIGGER:CLKRec:CR:RESETLockc ount
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_SetClockRecoverySaveConfiguration(ViSessio nInstrumentHandle, ViInt32 *configuration)	TRIGGER:CLKRec:CR:SCONFIGDev ice [POWER_ON   SETUP_1   SETUP_2   SETUP_3   SETUP_4]
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoverySerialNumber(ViSessioninst rumentHandle, ViChar *serialNumber)	TRIGGER:CLKRec:CR:SERIALnum?

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Action	Explanation	Information/From	To	PI command
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryStandard(ViSessioninstru- mentHandle, ViChar *standard) ViStatus_VI_FUNC tkdsa83_SetClockRecoveryStandard(ViSessioninstru- mentHandle, ViChar *standard)	TRIGGER:CLKRec:CR:STANDARD< Ostring>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoveryStandardList(ViSessioninstru- mentHandle, ViCharstandardList[])	TRIGGER:CLKRec:STANDARDList?
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoverySubclockAmplitude(ViSessio- ninstrumentHandle, ViReal64 *subclockAmplitude) ViStatus_VI_FUNC tkdsa83_SetClockRecoverySubclockAmplitude (ViSessioninstrumentHandle, ViReal64 subclockAmplitude)	TRIGGER:CLKRec:CR:SUBCLOCKA mpl<NR3>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoverySubclockDivisionRatio (ViSessioninstrumentHandle, ViInt32 *subclockDivisionRatio) ViStatus_VI_FUNC tkdsa83_SetClockRecoverySubclockDivisionRatio (ViSessioninstrumentHandle, ViInt32 subclockDivisionRatio)	TRIGGER:CLKRec:CR:SUBCLOCK Div<NR1>
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoverySubclockDivisionList (ViSessioninstrumentHandle, ViInt32 subclockDivisionList[])	TRIGGER:CLKRec:CR:SUBCLOCK DIVList?
Add	New functions for an existing command.		ViStatus_VI_FUNC tkdsa83_GetClockRecoverySubclockOutput(ViSessionin- strumentHandle, ViInt *output) ViStatus_VI_FUNC tkdsa83_SetClockRecoverySubclockOutput (ViSessioninstrumentHandle, ViInt output)	TRIGGER:CLKRec:CR:SUBCLOCK Output [ ON   OFF]

**Table 1. List of Changes to Plug and Play, with PI Commands**

Action	Explanation	Information/From	To	PI command
Add	New functions for an existing command.		<pre> ViStatus_VI_FUNC tkds83_GetClockRecoverySoftwareRevision(ViSessioni nstrumentHandle, ViChar *softwareRevision) </pre>	<pre> TRIGGER:CLKRec:CR:SWRev? </pre>
Add	Clock recovery configuration list.		<pre> static ViStringClockRecoveryConfigList[6] = {"POWER_up", "SETUP_1", "SETUP_2", "SETUP_3", "SETUP_4", "FACTORY"}; </pre>	
Add	Clock recovery lock state list.		<pre> static ViStringClockRecoveryLockState[4] = {"UNLOCKED", "ACQUIRINGLOCK", "LOCKED", "HIGHITTER"}; </pre>	
Delete	Functionality no longer supported.	<pre> ViStatus_VI_FUNC tkds8k_SetPSyncRelativeTrigger (ViSessionInstrumentHandle, ViInt32 relativeBit) </pre>		
Delete	Functionality no longer supported.	<pre> ViStatus_VI_FUNC tkds8k_GetPSyncRelativeTrigger (ViSessionInstrumentHandle, ViInt32 *relativeBit) </pre>		
Modify	Record Length of 20 removed, 8000 and 16000 added.	<pre> ViStatus_VI_FUNC tkds8k_SetHorizontalParameters ( ViSessionInstrumentHandle, ViInt32 timebaseSelector, ViReal64 horizontalScale, ViReal64 horizontalPosition, ViInt32 recordLength, ViReal64 horizontalReferencePoint) </pre>	<pre> ViStatus_VI_FUNC tkds83_SetHorizontalParameters ( ViSessionInstrumentHandle, ViInt32 timebaseSelector, ViReal64 horizontalScale, ViReal64 horizontalPosition, ViInt32 recordLength, ViReal64 horizontalReferencePoint) </pre>	
Modify	Record Length of 20 removed, 8000 and 16000 added.	<pre> ViStatus_VI_FUNC tkds8k_GetHorizontalParameters ( ViSessionInstrumentHandle, ViInt32 timebaseSelector, ViReal64 *horizontalScale, ViReal64 *horizontalPosition, ViInt32 *recordLength, ViReal64 *horizontalReferencePoint, ViReal64 *horizontalResolution, ViReal64 *firstPointTime, ViReal64 *lastPointTime) </pre>	<pre> ViStatus_VI_FUNC tkds83_GetHorizontalParameters ( ViSessionInstrumentHandle, ViInt32 timebaseSelector, ViReal64 *horizontalScale, ViReal64 *horizontalPosition, ViInt32 *recordLength, ViReal64 *horizontalReferencePoint, ViReal64 *horizontalResolution, ViReal64 *firstPointTime, ViReal64 *lastPointTime) </pre>	
Delete	Functionality no longer supported.	<pre> ViStatus_VI_FUNC tkds8k_SetFrameScanStartBit (ViSessionInstrumentHandle, ViReal64 startBit) </pre>		

**Table 1. List of Changes to Plug and Play, with PI Commands**

Action	Explanation	Information/From	To	PI command
Delete	Functionality no longer supported.	ViStatus_VI_FUNC tktds8k_GetFrameScanStartBit (ViSessionInstrumentHandle, ViReal64 *startBit)		
Modify	Record Length of 20 removed, 8000 and 16000 added.	ViStatus_VI_FUNC tktds8k_SetWaveform (ViSessionInstrumentHandle, ViInt32 destination, ViReal64 waveformArray[], ViInt32 numPoints, ViReal64 XOffset, ViReal64 XIncrement, ViReal64 YScale, ViReal64 YZero, ViReal64 YMult)	ViStatus_VI_FUNC tkds83_SetWaveform (ViSessionInstrumentHandle, ViInt32 destination, ViReal64 waveformArray[], ViInt32 numPoints, ViReal64 XOffset, ViReal64 XIncrement, ViReal64 YScale, ViReal64 YZero, ViReal64 YMult)	
Modify	New color parameter is a COLORREF number. This change applies to all functions that accept a color parameter.	# define tktds8k__COL_MAX 15L	# define tkds83__COL_MAX 16777216L	
Modify	Add new color parameter.	ViStatus_VI_FUNC tktds8k_SetMaskSourceParameters (ViSessionInstrumentHandle, ViInt32 maskSource, ViInt32 sourceTimebase, ViInt32 maskStandard, ViInt32 waveformDBState, ViInt32 maskCountState) ViStatus_VI_FUNC tktds8k_GetMaskSourceParameters (ViSessionInstrumentHandle, ViInt32 *maskSource, ViInt32 *maskStandard, ViInt32 *waveformDatabaseState, ViInt32 *countState)	ViStatus_VI_FUNC tkds83_SetMaskSourceParameters (ViSessionInstrumentHandle, ViInt32 maskSource, ViInt32 sourceTimebase, ViInt32 maskStandard, ViInt32 waveformDBState, ViInt32 maskCountState, ViInt32 maskColor) ViStatus_VI_FUNC tkds83_GetMaskSourceParameters (ViSessionInstrumentHandle, ViInt32 *maskSource, ViInt32 *maskStandard, ViInt32 *waveformDatabaseState, ViInt32 *countState, ViInt32 *maskColor)	MASK:COLOR<NR1>

**Table 1. List of Changes to Plug and Play, with PI Commands**

Action	Explanation	Information/From	To	PI command
Modify	Trigger Mode parameter added to functions.	<pre> ViStatus_VI_FUNC tktds8k_SetClockRecoveryParameters (     ViSessionInstrumentHandle,     ViInt32 clockRecoverySource,     ViInt32 clockRecoveryValue) ViStatus_VI_FUNC tktds8k_GetClockRecoveryParameters (     ViSessionInstrumentHandle,     ViInt32 *clockRecoveryValue,     ViCharclockRecoveryList[],     ViInt32 *clockRecoverySource) </pre>	<pre> ViStatus_VI_FUNC tktdsa83_GetClockRecoveryParameters (     ViSessionInstrumentHandle,     ViInt32 *clockRecoveryValue,     ViCharclockRecoveryList[],     ViInt32 *clockRecoverySource) ViStatus_VI_FUNC tktdsa83_SetClockRecoveryParameters (     ViSessionInstrumentHandle,     ViInt32 clockRecoverySource,     ViInt32 clockRecoveryValue,     ViInt32 triggerMode) </pre>	<pre> TRIGGER:MODE [EYE   PATtern   OTHER] </pre>
Modify	Trigger Mode parameter added to functions.	<pre> ViStatus_VI_FUNC tktds8k_GetClockRecoveryParameters (     ViSessionInstrumentHandle,     ViInt32 *clockRecoveryValue,     ViCharclockRecoveryList[],     ViInt32 *clockRecoverySource) ViStatus_VI_FUNC tktds8k_SetClockRecoveryParameters (     ViSessionInstrumentHandle,     ViInt32 clockRecoverySource,     ViInt32 clockRecoveryValue) </pre>	<pre> ViStatus_VI_FUNC tktdsa83_GetClockRecoveryParameters (     ViSessionInstrumentHandle,     ViInt32 *clockRecoveryValue,     ViCharclockRecoveryList[],     ViInt32 *clockRecoverySource) ViStatus_VI_FUNC tktdsa83_SetClockRecoveryParameters (     ViSessionInstrumentHandle,     ViInt32 clockRecoverySource,     ViInt32 clockRecoveryValue,     ViInt32 triggerMode) </pre>	<pre> TRIGGER:MODE [EYE   PATtern   OTHER] </pre>
Add	New function for new commands. The tcrClockRate parameter can be any value between 25KHz and 300KHz.	<pre> ViStatus_VI_FUNC tktds8k_GetTdrClockTriggerParameters (     ViSessionInstrumentHandle,     ViReal64 tdrClockRate) ViStatus_VI_FUNC tktds8k_SetTdrClockTriggerParameters (     ViSessionInstrumentHandle,     ViReal64 tdrClockRate) </pre>	<pre> ViStatus_VI_FUNC tktdsa83_GetTdrClockTriggerParameters (     ViSessionInstrumentHandle,     ViReal64 tdrClockRate) ViStatus_VI_FUNC tktdsa83_SetTdrClockTriggerParameters (     ViSessionInstrumentHandle,     ViReal64 tdrClockRate) </pre>	<pre> TDR:INTRate&lt;NR3&gt; </pre>
Delete	Remove unused error messages.	<pre> #define tktds8k_ERROR_PATSYNC_NO_MODULE (160+tktds8k_GENERIC_ERROR) #define tktds8k_ERROR_PATSYNC_INVALID_SOURCE (161+tktds8k_GENERIC_ERROR) </pre>		



**Table 1. List of Changes to Plug and Play, with PI Commands**

Action	Explanation	Information/From	To	PI command
Add	New communication standard tokens to the BitsStandard[] array.		ENET41250 ENET40GB_LR4 ENET40GB_SR4 ENET100GB_ER4 ENET100GB_LR4 ENET100GB_SR10 FC8500FINAL FC14025_MMR6_1 FC14025_SMR6_1	
Add	New filters to the FilterType[] array.		INF2500 INF5000 OBSAI6144 CPRI7373 FC8500FINAL FEC12500 ENET103R4 ENET257R4 ENET103R10 INF25781 OTU27952 ENET41250 FPELECOUT	

**Table 1. List of Changes to Plug and Play, with PI Commands**

Action	Explanation	Information/From	To	PI command
Add	Add/change these predefined colors for convenience.		<pre>#define tkdsa83_COLOR_BLACK 0 #define tkdsa83_COLOR_BLUE 16711680 #define tkdsa83_COLOR_AQUA 16776960 #define tkdsa83_COLOR_LIME 65280 #define tkdsa83_COLOR_FUSCHIA 16711935 #define tkdsa83_COLOR_RED 255 #define tkdsa83_COLOR_YELLOW 65535 #define tkdsa83_COLOR_WHITE 16777215 #define tkdsa83_COLOR_NAVY 8388608 #define tkdsa83_COLOR_TEAL 8421376 #define tkdsa83_COLOR_GREEN 32768 #define tkdsa83_COLOR_PURPLE 8388736 #define tkdsa83_COLOR_MAROON 128 #define tkdsa83_COLOR_OLIVE 32896 #define tkdsa83_COLOR_GRAY 8421504 #define tkdsa83_COLOR_SILVER 12632193 #define tkdsa83_COLOR_CH1 65278 #define tkdsa83_COLOR_CH2 16776960 #define tkdsa83_COLOR_CH3 16711935 #define tkdsa83_COLOR_CH4 65280 #define tkdsa83_COLOR_CH5 42495 #define tkdsa83_COLOR_CH6 16724675 #define tkdsa83_COLOR_CH7 3289855 #define tkdsa83_COLOR_CH8 65475</pre>	
Add	New function for an existing command.		<pre>ViStatus_VI_FUNC tkdsa83_GetTriggerClockStatus (ViSessionInstrumentHandle, ViCharclockStatus[])</pre>	TRIGGER:CLOCK:STATUS?
Add	New function for an existing command.		<pre>ViStatus_VI_FUNC tkdsa83_GetPhaseReferenceStatus (ViSessionInstrumentHandle, ViInt32 chan, ViCharphaseRefStatus[])</pre>	PHASeref:CH<x>:STATUS?

## Table 2. List of PI Commands added to the DSA8300

1.	HORizontal:DISPlayscale:SEConds	26.	TRIGger:CRc:JITter:BINs
2.	HORizontal:DISPlayscale:BITS	27.	TRIGger:CRc:JITter:LOGX
3.	HORizontal:DISPlayscale:DISTance	28.	TRIGger:CRc:JITter:LOGY
4.	TDR:CH<x>:REF10Mhz	29.	TRIGger:CRc:JITter:UNIts
5.	TDR:CH<x>:EXT10MHZref:FREQ	30.	TRIGger:CRc:JITter:RISingslope
6.	TRIGger:CRc:EQualizer	31.	TRIGger:CRc:JITter:FALLingslope
7.	TRIGger:CRc:MODEInum	32.	TRIGger:CRc:JITter:MEAStype
8.	TRIGger:CRc:CAPabilities	33.	TRIGger:CRc:JITter:RESULts:SCAns
9.	TRIGger:CRc:LOCKFp	34.	TRIGger:CRc:JITter:RESULts:HZPerbin
10.	TRIGger:CRc:HALFRate	35.	TRIGger:CRc:JITter:RESULts:CURVE:MIN
11.	TRIGger:CRc:JITter:SCAns	36.	TRIGger:CRc:JITter:RESULts:CURVE:MAX
12.	TRIGger:CRc:JITter:RESOLution	37.	TRIGger:CRc:JITter:RESULts:CURVE:AVG
13.	TRIGger:CRc:JITter:SSC	38.	TRIGger:CRc:JITter:RESULts:CURVE:VALue
14.	TRIGger:CRc:JITter:FILter<x>:MIN	39.	TRIGger:CRc:JITter:RESULts:CURVE:PEAk
15.	TRIGger:CRc:JITter:FILter<x>:MAX	40.	TRIGger:CRc:JITter:RESULts:CURVE:FREquency
16.	TRIGger:CRc:JITter:START	41.	TRIGger:CRc:JITter:RESULts:CURVE:AMPlitude
17.	TRIGger:CRc:JITter:PROgress	42.	TRIGger:CRc:SSC:START
18.	TRIGger:CRc:JITter:PAUse	43.	TRIGger:CRc:SSC:STATus
19.	TRIGger:CRc:JITter:RESUME	44.	TRIGger:CRc:SSC:PAUSE
20.	TRIGger:CRc:JITter:STOP	45.	TRIGger:CRc:SSC:RESUME
21.	TRIGger:CRc:JITter:CLEAR	46.	TRIGger:CRc:SSC:STOP
22.	TRIGger:CRc:JITter:MINFrequency	47.	TRIGger:CRc:SSC:RESULts
23.	TRIGger:CRc:JITter:MAXFrequency	48.	TRIGger:CRc:SSC:MEASUrement
24.	TRIGger:CRc:JITter:MINAmplitude	49.	TRIGger:CRc:SSC:CLEAR
25.	TRIGger:CRc:JITter:MAXAmplitude		

### Table 3. List of PI Commands Not Included with DSA8300

1.	HORizontal:TBMMode	9.	TRIGger:PSYNc:CH<x>:DATARate
2.	HORizontal:FRAMescan:AUTOPosition	10.	TRIGger:PSYNc:CH<x>:PLENgtH
3.	HORizontal:FRAMescan:STARTBit	11.	TRIGger:PSYNc:CH<x>:DCRAtio
4.	SYSTem:TRIGProbe:PSYNc:CLKRAnge	12.	TRIGger:PSYNc:TRIGProbe:DATARate
5.	SYSTem:TRIGProbe:PSYNc:PLENRAnge	13.	TRIGger:PSYNc:TRIGProbe::PLENgtH
6.	SYSTem:CH<x>:PSYNc:CLKRAnge	14.	TRIGger:PSYNc:TRIGProbe:DCRAtio
7.	SYSTem:CH<x>:PSYNc:PLENRAnge	15.	TRIGger:NOISErej
8.	TRIGger:PSYNc:SOURce		

### Table 4. List of PI Commands Modified in DSA8300

1.	PHAseref:SOURce	Added MAINFrameenum value.
2.	TRIGger:INTRate	Now accepts any value from 25 to 300KHz.
3.	TRIGger:MODE	The commands AUTO, NORMal had been removed; new commands are EYE, PATtern and OTHER.
4.	TRIGger:SOURce	The commands CLKRECovery and PSYNc had been removed; new commands added are C1CLKRec, C3CLKRec and EXTPrescaler.
5.	TDR:CH<x>:INTRate	The command now accepts any value from 25 to 300KHz.