

TDS2000C and TDS1000C-SC Series Oscilloscope Customer Release Notes

Version: [24.15]
Last revised: [March 4, 2011]
Product: TDS1000C-SC and TDS2000C

Introduction

Version v24.15 is a firmware update for the TDS1000C-SC and TDS2000C Series oscilloscope.
Installation Guide

This firmware update is intended to update TDS1000C-SC and TDS2000C Series oscilloscopes to version v24.15.

History

24.15 March 4, 2011

In version V24.15, the firmware adds the following features for TDS1000C-SC and TDS2000C Series oscilloscopes:
- Data Logging prelong time from 8 hours to 24 hours and infinite. From half hour to 8 hours, duration step is 30 minutes, from 8 hours to 24hours, duration step is one hour.

V24.09 October 9, 2010

Initial Release.

In version V24.15, the firmware adds the following features for TDS1000C-SC and TDS2000C Series oscilloscopes:

- Support USB mass storage which has more than 2GB volume (up to 64GB);
- Support RMS, cursor RMS, pduty, phase, delay measurement types and the PI commands to set and query the new measurement types;
- PI command to set and query measurement method, which supports auto, min-max, histogram measurement method.
- Limit testing feature and the PI commands to set and query the related limit testing function .
- Data Logging feature and the PI commands to set and query the related data logging function. Data logging duration can be half an hour to 24 hours and infinite.

Description

Version V24.09 adds the following features:

1. Support USB mass storage which has more than 2GB volume (up to 64GB) Instruments can now support larger USB flash drives, eliminating the 2GB limitation

of earlier firmware versions.

- A PC will usually format flash drives faster than the instrument.

However, Windows-XP

may not be able to format USB flash drives larger than 32GB.

- FAT FS, which follows the 8.3 filename convention

- You may experience slow performance when using drives formatted with FAT (FAT16) or some FAT32 versions. You will experience better performance on drives that have been

formatted using the standard FAT32 format.

- If a FAT32 formatted flash drive takes a long time to verify, it may have corrupted

capacity information. Saving a file from a PC onto the drive may help correct this condition.

- To avoid long verification times on FAT(FAT16)and non-conforming FAT32 USB flash drives,

the instruments verifies that at least 50MB of free space is available.

In this case the

instrument will report ">50 MB" of free space on the drive.

- When a flash drive contains a large number of files in the current directory, verifying

the drive and saving files will take longer. You will experience faster performance by

limiting the number of files in the current directory.

2. New automatic measurement: RMS, cursor RMS, pduty, phase, delay measurement types

The RSM, Cursor RMS pduty, phase, delay measurement types is added into the Measurement Type sub-menu in the Measure main menu.

The following commands is updated for programmable interface.

- MEASUREMENT:IMMED:TYPE { FREQUENCY | MEAN | PERIOD | PHASE | PK2pk | CRMS | RMS | MINIMUM | MAXIMUM | RISE | FALL | PWIDTH | NWIDTH | CURSORRMS | PDUTY | PHASE | DELAY }

- MEASUREMENT:MEAS:TYPE { FREQUENCY | MEAN | PERIOD | PK2pk | CRMS | RMS | MINIMUM | MAXIMUM | RISE | FALL | PWIDTH | NWIDTH | CURSORRMS | PDUTY | PHASE | DELAY | NONE }

- MEASUREMENT:MEASAU:TYPE [CRMS | FALL | FREQUENCY | MAXIMUM | MEAN | MINIMUM | NONE | NWIDTH | PERIOD | PK2pk | PWIDTH | RISE | RMS | CURSORRMS | PDUTY | PHASE | DELAY]

3. New programmable interface commands for Measurement Method: AUTO, MIN/MAX, HISTOGRAM

This control is limited to the programmable interface and is not available through the front panel.

- The PI-commands to access measurement method

a) Query the current measurement method

: MEASUREMENT: METHOD?

This will return Auto, MINMax, HISTogram respectively according to the current measurement method.

b) Set measurement method to Auto (This is the default mode.)

: MEASUREMENT: METHOD Auto

c) Set measurement method to MINMAX

: MEASUREMENT: METHOD MINMax

d) Set Cycle RMS mode to HISTOGRAM

: MEASUREMENT: METHOD HISTogram

4. Limit Test feature

One "Limit Test" menu is added into the Utility main menu in order to active this function from front panel.

The following commands is added for programmable interface.

LIMIT?

LIMIT:SOURCE { CH | MATH }

LIMIT:SOURCE?

LIMIT:COMPARE REF

LIMIT:COMPARE?

LIMIT:RESULT:FAIL?

LIMIT:RESULT:PASS?

LIMIT:RESULT:TOTAL?

LIMIT:SAVEIMAGE { OFF | ON | 0 | 1 }

LIMIT:SAVEIMAGE?

LIMIT:SAVEWFM { OFF | ON | 0 | 1 }

LIMIT:SAVEWFM?

LIMIT:STATE { OFF | ON | 0 | 1 }

LIMIT:STATE?

LIMIT:STOPAFTER:MODE { MANUAL | WAVEFORM | VIOLATION | TIME }

LIMIT:STOPAFTER:MODE?

LIMIT:STOPAFTER:TIME

LIMit:STOPAfter:TIME?
LIMit:STOPAfter:VIOLation
LIMit:STOPAfter:VIOLation?
LIMit:STOPAfter:WAVEform
LIMit:STOPAfter:WAVEform?
LIMit:TEMPLate APPLY
LIMit:TEMPLate:DESTination REF
LIMit:TEMPLate:DESTination?
LIMit:TEMPLate:SOURce { CH | MATH }
LIMit:TEMPLate:SOURce?
LIMit:TEMPLate:TOLerance:HORizontal
LIMit:TEMPLate:TOLerance:HORizontal?
LIMit:TEMPLate:TOLerance:VERTical
LIMit:TEMPLate:TOLerance:VERTical?

5. Data Logging feature

One "Data Logging" menu is added into the Utility main menu in order to active this function from front panel.
The following commands is added for programmable interface.

DATALOGging:STATE?
DATALOGging:STATE[OFF | ON| 1 | 0]
DATALOGging:SOURce?
DATALOGging: SOURce?[CH|MATH]
DATALOGging:DURAtion?
DATALOGging:DURAtion
[30|60|90|120|150|180|210|240|270|300|330|360|390|420|450|480|540|600|660|720|780|840|900|960|1020|1080|1140|1200|1260|1320|1380|1440|9999]

Users who would like to disable Autoset and Autorange, read the following:

(1) Via Programmatic Interface
Programmatic Interface commands are AUTOSSET:ENABLE? and
AUTOSSET:ENABLE {ON, OFF, 0, 1}

(2) Via Front Panel
Using Front Panel Control feature can only be accessed when in service mode. Please see service manual for instructions on how to access service mode.

Once in service mode, press UTILITY button, then select "Service" option, then select "Service Diag." option, then select "page 2 of 2", then select "AUTOSSET ENABLE" to be either 0 or 1.
0 = disabled and 1 = enabled.

Users who program their own custom application software to communicate with the TDS2000C or TDS1000C-SC should read the following:
For optimal performance, when programming and communicating to the instrument the following is recommended:

(1) Be familiar with the programmers guide Status and Events section.
(2) Configure the rear USB port on instrument to "Computer" or "Auto Detect" setting. Press the UTILITY button. Select "Options" option. Change the "Rear USB Port" option to "Computer" or "Auto Detect"

(3) Controlling programs should use the *STB? query in preference to the serial poll following a service request (SRQ).

Why?: A serial poll following a service request (SRQ) may cause communication to hang.

(4) Connect the TDS1000C-SC / TDS2000C to a USB 2.0 port for reliable communication.

Why?: When connected to a USB1.0 or USB1.1 port, data communication to the TDS1000C-SC / TDS2000C is unreliable. The problem is magnified when communicating through a hub or when multiple instruments are connected to the PC.

(5) Programs should check for a timeout error after each read.

Why?: In rare circumstances, the read following a query may time out. When a timeout error is observed, it is necessary to re-send the query and re-read the query response.

The following only apply if using a TEK-USB-488 adapter

(6) When instrument is communicating via a TEK-USB-488 GPIB to USB adapter, *WAI command, the BUSY? query, and the *OPC? query are preferred methods of achieving synchronization. See the programmer manual for examples of how to use these methods.

Why?: The TEK-USB-488 adapter is unreliable when receiving service requests (SRQs) from TDS2000C and TDS1000C-SC.

Following is a recommended programming example for how to determine when a command has been executed by the instrument.

*SRE 0 # Disable service request

:ACQUIRE:STOPAFTER SEQUENCE

set timeout to a value greater than that expected for the command to complete

:ACQUIRE:STATE B; *OPC?

(7) When instrument is communicating via a TEK-USB-488 GPIB to USB adapter, the following hardcopy file formats are recommended: BMP, EPSIMAGE, JPEG, RLE, TIFF. (Do not use PCX).

(8) Refer to the firmware release notes for the TEK-USB-488 adapter, for programming recommendations generic to the adapter.

===== END =====