TcCalc

Drastic Time Code Calculator
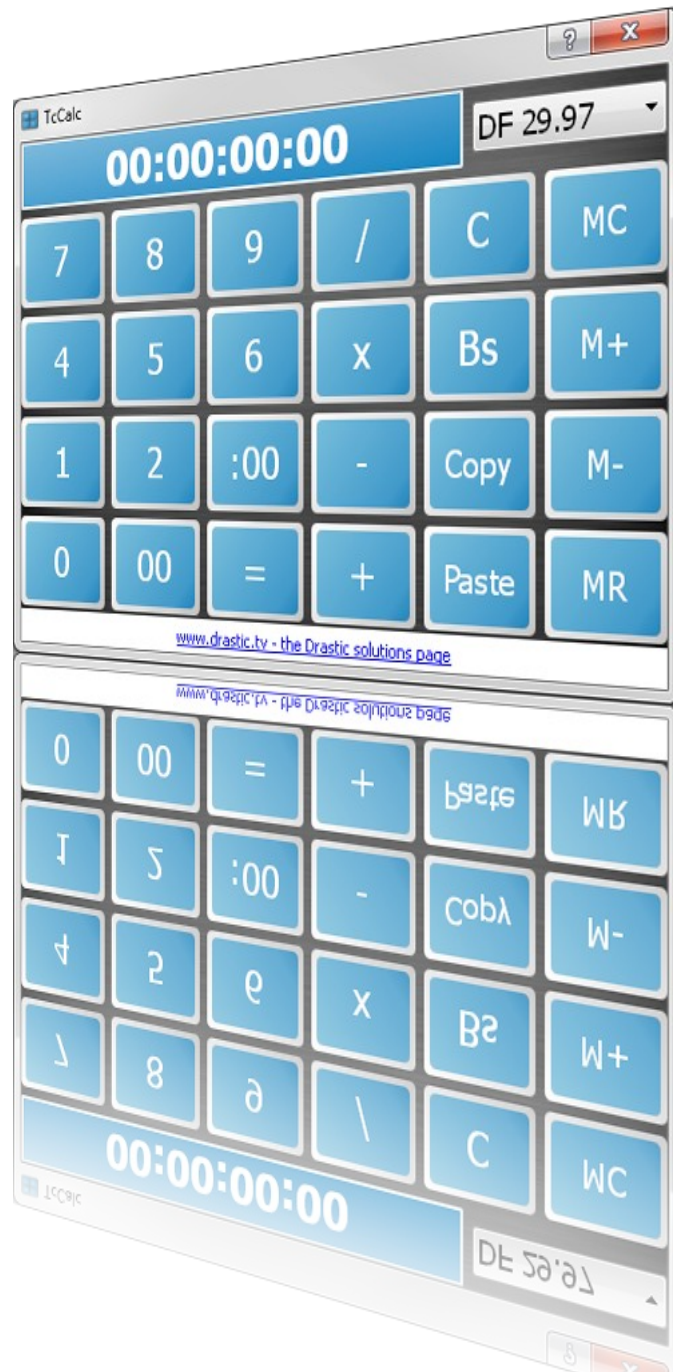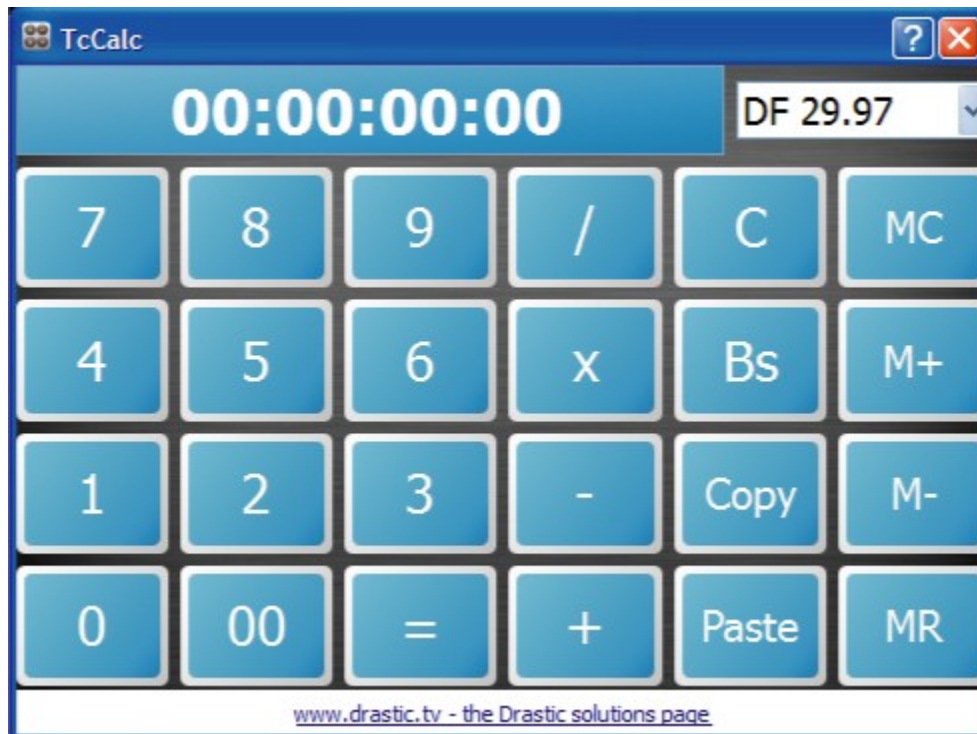
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Overview

The first version of Drastic **TcCalc** appeared before 1995 as part of the VVCR digital disk recorder's VVG graphical user interface. Since then it has gone through many iterations, including the first standalone version (2.0) in 1995 all the way up to the current multi-platform, multi-device version 4.0.

Features

TcCalc allows the user to select a video standard, input a time code location, select another video standard and then calculate the actual time code location this frame would be at given the new video standard.

The user may also perform mathematical calculations such as add, subtract, multiply and divide using time code values.

The values obtained from these calculations may be copied using the interface and pasted elsewhere for maximum convenience. As well, time code values stored in the buffer (the result of a copy operation outside of **TcCalc**) may be pasted into the interface and used for calculations.

Supported Platforms

TcCalc supports 4.0 Windows XP~7 32 and 64 bit, Windows 95, 98, NT, 10, and macOS 10.5 or greater operating systems.

Reference

The following controls and displays are available in **TcCacl**.

Main Interface

1	**Time Code** window	Displays the current time code value input by the user, or 00:00:00:00 if no number has been entered
2	**Video Standard** pulldown menu	Use the video standard pulldown menu to select the video standard.
3	**Number 9** key	Enter the number 9 into the time code window.
4	**Number 8** key	Enter the number 8 into the time code window.
5	**Number 7** key	Enter the number 7 into the time code window.
6	**Number 6** key	Enter the number 6 into the time code window.
7	**Number 5** key	Enter the number 5 into the time code window.
8	**Number 4** key	Enter the number 4 into the time code window.
9	**Number 3** key	Enter the number 3 into the time code window.
10	**Number 2** key	Enter the number 2 into the time code window.
11	**Number 1** key	Enter the number 1 into the time code window.
12	**Equals (=)** key	Display the result of a calculation in the time code

		window.
13	**Double zero (00)** key	Enter two zeroes into the time code window.
14	**Zero (0)** key	Enter the number 0 into the time code window.
15	**Divide (/)** key	Enter a divide function.
16	**Clear (c)** key	Clear the time code window (return to 00:00:00:00)
17	**Memory Clear (MC)** key	Clear the memory value.
18	**Multiply (X)** key	Enter a multiply function.
19	**Back Space (Bs)** key	Back space over, or delete the previous keyboard press (when entering time code values this drops the last digit typed, moving everything before that to the right by one digit and entering a 0 at the first digit).
20	**Memory Add (M+)** key	Enter the current time code value into the memory.
21	**Subtract (-)** key	Enter a subtract function.
22	**Copy** key	Copy the value in the time code window.
23	**Memory Delete (M-)** key	Remove any existing value from memory.
24	**Plus (+)** key	Enter a plus, or add function.
25	**Paste** key	Paste the value from the buffer into the time code window. This value would be retained from any Copy function performed by the user.
26	**Memory Recall (MR)** key	Enter the memory value into the equation.
27	**Drastic software** link	This area cycles through a list of various links the user might select to download Drastic software.

Keyboard Shortcuts

0…**9**	Number keys
.	00 (double zero)
+	Plus, or Add
-	Minus, or Subtract
*	Multiply
/	Divide
=	Equals
C (**CTRL-C**)	Copy to clipboard
V (**CTRL-V**)	Paste from clipboard
M	Memory +
R	Memory recall
J	Memory -
X	Memory clear
Z or <**Esc**>	Clear
<**Backspace**>	Delete last digit
F4 or **I**	Frame video standard
F5 or **F**	Film 24 fps (also 23.98) video standard
F6 or **P**	PAL 25 fps video standard
F7 or **D**	Drop frame 29.97 video standard
F8 or **N**	Non drop frame 30 video standard
F9 or **O**	PAL 50 fps video standard
F10 or **S**	Drop frame 59.94 fps video standard
F11 or **B**	Non drop frame 60 fps video standard
Q	Quit

User Guide

Calculate Between Video Standards

Here is how to input a known time code location from one video standard and calculate where the same frame would occur in another video standard.

Select the Video Standard

To calculate the number of frames required to fill the same amount of time between differing video standards, start with the known video standard. Available standards include: **Frame**, **23.98, 23.98 True Time, Film 24**, **PAL 25**, **DF 29.97**, **NDF 30**, **PAL 50**, **DF 59.94** and **NDF 60**. Use the **Video Standard** pulldown menu to select the correct standard.

Enter the Time Code Location

Now that the correct video standard has been set, enter the time code value which is under consideration. Pressing the number keys or using the numbers in the keyboard shortcuts populates the time code window with your time code location. If you have copied a time code value from another application, pressing the **Paste** button will also work.

Select the New Video Standard

After the above two steps have been taken (you have the correct video standard and the time code value entered), use the **Video Standard** pulldown menu to select the other video standard, or the video standard whose time code value needs to be calculated. Once selected, the new time code value will be displayed in the time code window.

Examples

Example 1: Drop frame 29.97 to non-drop frame
      Use the **Video Standard** pulldown menu to select **DF 29.97**.
      Enter the time code value **00:10:00:01**.
      Use the **Video Standard** pulldown menu to select **NDF 30**.
      The time code window now should display **00:09:59:13**.

Example 2: PAL 25 to PAL 50
      Use the **Video Standard** pulldown menu to select **PAL 25**.
      Enter the time code value **00:10:00:01**.
      Use the **Video Standard** pulldown menu to select **PAL 50**.
      The time code window now should display **00:05:00:01**.

In fact, each of the available video standards will be available for the known video standard/time code value the user has input at the beginning of the operation.

Example 3: Drop frame 29.97 to everything else
      Use the **Video Standard** pulldown menu to select **DF 29.97**.
      Enter the time code value **00:10:00:01**.
         Using the **Video Standard** pulldown menu:
      Select **Frame** and the time code window now should display **17983**.
      Select **Film 24** and the time code window now should display **00:12:29:07**.
      Select **PAL 25** and the time code window should now display **00:11:59:08**.

Select **NDF 30** and the time code window now should display **00:09:59:13**.
Select **PAL 50** and the time code window should now display **00:05:59:33**.
Select **DF 59.94** and the time code window should now display **00:05:00:03**.
Select **NDF 60** and the time code window should now display **00:04:59:43**.

Calculate Within Video Standards

There may be occasions where the user would want to add, subtract, divide or multiply time code values within the same video standard.

Add

Add to obtain the duration of multiple clips which for example may need to be combined into a playlist or timeline.

> Use the pulldown menu to set the video standard being used.
> Enter the first time code value.
> Press the **+** (**Add**) button.
> Enter the second time code value.
> Press the **=** (**Equals**) button.
> The new time code value should be displayed, being the length of both clips combined. This result would be available in all the other video standards as well. The user could add as many values as needed (value + value + value + etc.) then press = (Equals) once all of the values had been entered. In this case TcCalc would keep a running total as values were entered.

Subtract

Subtract to obtain the duration of a clip where a portion would be edited out, such as in a sub-clip.

> Use the pulldown menu to set the video standard being used.
> Enter the time code value of the clip.
> Press the **–** (**Subtract**) button.
> Enter the duration of the sub-clip.
> Press the **=** (**Equals**) button.
> The new time code value should be displayed, being the length of the clip minus the sub-clip. This result would be available in all the other video standards as well. **TcCalc** prefers its subtraction calculations to be discrete, so if you need to subtract multiple values from one (presumably larger) value, press the **=** (**Equals**) button after each subtraction calculation.

Divide

Divide to obtain the duration of a clip (or clips) which has (or have) been split into equal length sub-clips.

> Use the pulldown menu to set the video standard being used.
> Press the **/** (**Divide**) button.
> Enter the number of equal length pieces the clip is being divided into (for example if you want make three equal length sub-clips, press the **3** button or enter **3** using the number keys on the keyboard).
> Press the **=** (**Equals**) button.
> The new time code value should be displayed, being a fraction of the main clip. **TcCalc** prefers its division calculations to be discrete, so if you need to divide a value more

than once, press the **=** (**Equals**) button after each division calculation.

Multiply

Multiply to obtain the total duration of multiple same length clips.

> Use the pulldown menu to set the video standard being used.
> Press the **X** (**Multiply**) button.
> Enter the number of equal length clips being considered (for example if you want to combine three equal length clips, press the **3** button or enter **3** using the number keys on the keyboard)
> Press the **=** (**Equals**) button.
> The new time code value should be displayed, being a multiple of the main clip. **TcCalc** prefers its multiply calculations to be discrete, so if you need to multiply a value more than once, press the **=** (**Equals**) button after each multiplication calculation.

Using the Memory Buttons

The user may wish to store a time code value in the memory area, especially for common values or repetitive tasks.

Add to Memory

Once a useful time code value has been entered into the **Time Code** window, press the **M+** button (or the **M** on the keyboard) to add it into memory.

Memory Recall

Once a time code value has been entered into memory, it may be recalled by pressing the **MR** button (or the **R** on the keyboard).

Remove From Memory

Once a time code value in memory is no longer needed, it may be removed by pressing the **M-** button (or the **J** on the keyboard). Keep in mind that values contained in memory are also deleted when the **TcCalc** application is closed.

Examples

Perhaps your company uses a 32 second clip to brand its programming at the start of each show. Once the 32 second value has been entered into memory, the length of the program plus the length of the branding clip can be easily calculated.
> Enter 32 seconds (00:00:32:00) into the time code window
> Press the **M+** (add to memory) button to add this value into memory
> When want to add this value to a known clip length, press MR (memory recall)
> Press the **+** (add) button
> Enter the value of the known clip length
> Press the **=** (equals) button

Perhaps the same clip is inserted dynamically to stitch scenes together. In this case the clip is left in memory and the clips that comprise the program may be added conveniently.
> Enter 32 seconds (00:00:32:00) into the time code window
> Press the **M+** (add to memory) button to add this value into memory

Add a few clips (time code value + time code value etc.)
Press the **+** (add) button
Press the **MR** (memory recall) button
Add a few more clips (+ time code value + time code value etc.)
Each time the memory value is needed it may be entered into the equation simply by pressing the MR (memory recall) button
Press the **=** (equals) button once all values have been entered

Notes

Non-existent Time Code Locations

Specific time code locations may not actually exist, depending on the video standard being used. For example, if you enter a drop frame 29.97 time code location of 6 minutes (00:06:00:00) and press the **Equals** button you will notice it has been recalculated to 00:05:59:28. This is due to the fact that the frame that would have been at 6 minutes is one of the frames that is 'dropped', or omitted in drop frame time code.

You can check whether a frame would occur or not by selecting a video standard, entering the time code location, then pressing the **Enter** button.

Enter is 'Last Keypress' Sensitive

When using keyboard shortcuts such as the number pad for entering numbers, or **Z** for **Clear**, you should be aware that the **Enter** key on the keyboard presses any highlighted button on the interface. Also, the last keypress remains highlighted. So if for example if the last button on the interface pressed was 5, each time you pressed the **Enter** key on the keyboard after that it would enter another 5.

23.98, 23.97 and 23.98 True Time

The time code terms '23.98' and '23.97' refer to the same time base: 24000/1001. This time base is useful when converting between NTSC rate video (SD or HD 29.97 or 30000/1001) and film like rates (24000/1001). The original purpose of using 29.97 versus 30 was to avoid direct interference from the mains lines in the US and Canada which run at 60 Hz. To make sure there was not a constant offset, the rate of 30/1.001 was chosen, giving us a frame rate of roughly 29.97. When converting between this rate and film rates, it is much easier to use a 1.001 divisor then convert directly to 24, so 23.98 was born.

The time code used for 23.98 editing is actually 24 fps based time code with no 'drop frame' to compensate for the 0.001 difference between the frame rates. This is the same as using NDF time code when editing in 29.97. There is a slow drift between real time and the time code. Unfortunately, there is no DF equivalent for 23.98, so there is no way to have 100% real time accurate time code. The 23.98 time code is the exact same math as the 24.

TcCalc provides a mode for calculating true length at 23.98. This mode is called 23 TT or 23.98 True Time. While this is very useful for figuring out exact time over longer periods, it should not be used to calculate time code in 23.98 as it will not be accurate to your editing equipment. It is provided as a tool for run time only.

This manual has been compiled to assist the user in their experience using TcCalc software. It is believed to be correct at the time of writing, and every effort has been made to provide accurate and useful information. Any errors that may have crept in are unintentional and will hopefully be purged in a future revision of this document. We welcome your feedback.

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