# The TDC Ultra - Quick Start Guide

This Quick Start provides basic instructions for using your TDC Ultra. For more detailed instructions, the complete User's Manual can be downloaded at *www.jamartech.com/manuals*.

What is the TDC Ultra?

The TDC Ultra is an electronic hand-held device that enables you to do a variety of manual traffic data collection. You can collect:

- **Standard Turning Movement Studies**
- **Enhanced Turning Movement Studies**
- **Manual Classification Studies**
- **Multi-direction Gap Studies**
- **Stop Sign Delay Studies**
- **Signalized Intersection Delay Studies**
- **Spot Speed Studies**
- **Saturation Flow Rate Studies**
- **Roundabout Movement Studies**
- **Time-Stamped Studies**

The most common of these is standard Turning Movement, which is described in this Quick Start. Refer to the full User's Manual for details on the other studies.
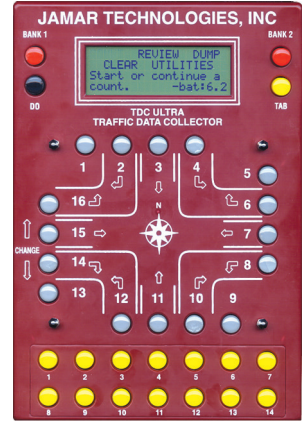
Multiple studies can be stored in the TDC Ultra. For each study, the unit stores the type of study, the date and time, a site code, and the data. Data can then be downloaded into the PETRAPro software which allows you to easily read, edit and store the data, as well as print a variety of reports and graphs.

Programming the TDC Ultra

The TDC Ultra is simple to use. An OFF/ON switch on top of the unit panel is used to turn the unit on and off. A 4-line by 20-character display helps you select the proper entries. All options are clearly displayed, with the currently selected option shown with a blinking highlight. The bottom lines of the display are used to explain the option that is highlighted.

Two buttons are all that are used to move from menu to menu, and to select from the various options shown on the display. The TAB key is used to cycle through the options while the DO key is used to select an option. If you move the highlight too far and over-shoot the desired option, just keep pressing the TAB key until it is re-selected.

Main Menu

To turn on the TDC Ultra, use the power switch that is mounted on the top panel of the unit. After two start up screens, the status the Main Menu is displayed. The Main Menu screen is the starting point for all of the options in the TDC Ultra. The options on this screen are:

```
COUNT   REVIEW   DUMP
   CLEAR   UTILITIES
Start or continue a
count.           -bat: 6.2
```

- **COUNT –** Start a New count or Continue the previous count. You can also check the amount of memory left for new counts.
- **REVIEW –** Display on the screen the data in memory for any of the counts.
- **DUMP –** Download all of the data in the TDC Ultra to a computer through the USB port.
- **CLEAR –** Clear the memory of all count data.
- **UTILITIES –** Perform a variety of operations such as tests, setting time & date, beeper control and performing Video mode counts.

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Making Data Collection Easier

Count Menu

When you select Count from the Main Menu, the screen shown to the right is displayed. There are several options that may be available on this menu. The first of these options, New, is used to start a new count. Select this from the Count menu whenever you want to start a new count. You are then prompted to select the type of study you want to do. The option available are:

NEW	STATUS
CONTINUE	EXIT

Start a new Turning movement count.

TM	CL DL GAP SF SD
SS RA TS TC	EXIT

Intersection Turning movement count

TM – Standard Turning Movement Study
CL – Vehicle Classification Study
DL – Signalized Intersection Delay Study
GAP – Multi-direction Gap Study
SF – Saturation Flow Rate Study

SD – Stop Sign Delay Study
SS – Spot Speed Study
RA – Roundabout Study
TS – Time-Stamped Study
TC – Enhanced Turning Movement Study

When you choose any of the studies, the TDC Ultra will step you through a series of menus to further define the parameters of the count, starting with the Site Code. Once done that, you are ready to start your count. Below we walk through doing a standard Turning Movement count.

Standard Turning Movement Studies

The TDC Ultra is designed to make turning movement data collection simple and accurate. The buttons are arranged to simulate a standard intersection, which makes collecting the data intuitive. There are 16 buttons, with 12 normally used for the left, through, and right movements from each of the four approach directions. The additional four buttons are user-defined; they can be used for buses, trucks, bicycles, pedestrians, or whatever you want. If a car makes a left turn from an approach, you simply push the button that shows a left turn from that direction. The TDC Ultra keeps track of everything else for you.
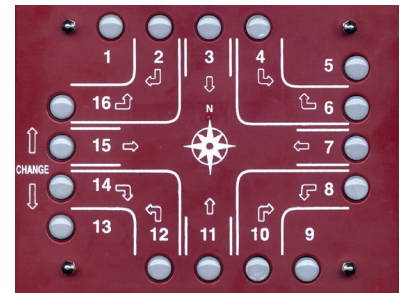
The TDC Ultra can also double or triple the number of movements counted from 16 to 32 or 48 by using the unit's two BANK keys in conjunction with the regular movement keys. If a movement key is pressed, the count is registered in the "primary" movements (1-16). If the BANK1 key is held down while a movement key is pressed, the count is registered in the "secondary" movements (17-32). If the BANK2 key is held down while a movement key is pressed, the count is registered in the "tertiary" movements (33-48).

Normally, the turning movements of less common events, like trucks, are counted with the secondary and tertiary (BANK1 and BANK2) keys. For example, if a car makes a right turn from the north approach, then you press button #2. If a light truck makes the same movement, you press and hold down the BANK 1 key while pressing button #2, which is counted in the secondary movements. If a heavy truck makes the same movement, you press and hold down the BANK 2 key while pressing button #2, which is counted in the tertiary movements. When this data is processed using the PETRAPro software, you can get percentage breakdowns of the data based on the different groups.

Before you start a standard turning movement study, you must ask yourself the following questions.

- • What are the user defined buttons (1,5,9,13) going to be used for, if at all?
- • Are the Bank 1 and Bank 2 keys going to be used?
- • Can one person do the study, or will it require two or more, using separate TDC Ultras?

The answer to these questions depends on the experience of the people doing the studies; there are no simple rules of thumb we can give you to help you decide. The important thing is to use your knowledge of the people doing the data collection, along with your experience with the traffic they are likely to see in the field, to decide in advance what the best strategy would be.

How to do a Turning Movement Study - Live Mode

1	5	15	30	60	EXIT

Select interval duration (minutes). Press DO to accept

Once you have programmed a site code for the study, you are prompted to choose the interval length that will be used. The default value is 15 minutes, as this is the most common interval length used for Turning Movement studies. We recommend that you use 15 minutes unless you have special requirements. Press DO once you have selected the interval length you wish to use.

After you have selected an interval to use, you are ready to start the study. The display shows the current count number and the interval number. In the example shown, this is the first count done, and it is at the first interval.

The TDC Ultra is waiting for you to push any movement button, which starts the study. The display in the lower left corner shows the current time, so it is easy to synchronize the start of the count to the beginning of the desired interval. Press any of the gray keys to begin counting and the TDC Ultra will start recording data.

```
          Turn Count
Count: 001            Int: 001
      --Any Key to Start--
07:59:37
```

When you push the first button to start the study, the display changes to show the amount of time left in the present interval. In this case, it starts at 15:00 minutes and counts down to zero. At the end of each interval, the TDC Ultra beeps three times.

```
          Turn Count
Count: 001            Int: 001

08:01:23              Rem 13:37
```

Normally you are not watching the display, you are watching the traffic. The beeps remind you that the interval is over. This is only important if this is the last interval and you are ready to quit; otherwise, just ignore the beeps and keep counting vehicles.

Once you start the study, the only way to quit it is to turn the TDC Ultra off. Always wait for the end of interval beeps before turning the unit off.

How to do a Turning Movement Study - Video Mode
A popular way to do manual traffic studies is to video record the location in question then later count the traffic while watching the video playback. The 'Video' selection of the **Utilities** menu is designed to let you do this in an efficient manner. By using the Video mode you can compress (or extend) the time needed to do a count by running the video faster (or slower) than real time. You can also take breaks during your counting without disrupting how the data is stored.

Since the video may have been recorded days or weeks in the past, when you select the Video option you are first prompted to enter the Time and Date to be used for the start of the count. The display shows the current hours, minutes, month, day, and year. Use the TAB key to move the highlight to the parameter that you need to adjust. Then use the Change (#15) key to add one to the current value, or use the Change (#14) to subtract one from the current value.

```
HR  MIN    MON  DAY  YR
   07:00         10/  30/  11
Change↑/↓ to modify
DO to set time/date
```

Continue using the Tab and Change keys until all of the parameters are correct, then press DO to set the start date and time for the count.

You are then prompted to select the type of count you want to do. The studies that can be done in Video mode are:
• TM – Standard Turning Movement Study • CL – Vehicle Classification Study • GAP – Gap Study •RA – Roundabout Study

Once you have programmed a site code for the study, you are prompted to choose the interval length that will be used. The default value is 15 minutes, as this is the most common interval length used for Turning Movement studies. We recommend that you use 15 minutes unless you have special requirements. Press DO once you have selected the interval length you wish to use.

Once the interval time has been selected, you are ready to start your study. Note that the data collection is exactly the same in video mode as it is in normal mode, with one important exception. During normal studies the TDC Ultra automatically keeps track of the time and stores the data at the end of the interval. In Video mode, YOU have control over when to end the current interval and start the new one. In the Normal mode screen, the time clock at the lower left runs in real time while the interval time remaining clock at the lower right counts down to the end of

```
          Turn Count
Count: 001            Int: 001

08:00:00             Rem
```

the interval. In Video mode, the time clock at the lower left remains static, showing the start time of the current interval, and there is no interval time remaining clock shown at the lower right.

When you want to advance to the next interval, you hold down, then release, the DO, TAB and BANK 2 keys at the same time. Once the keys are released, the Ultra will emit a triple beep and the clock at the lower left will advance to show the start time of the next interval.

With this ability you can do your counts while playing back the video at double or triple speed, allowing you to complete a study in a fraction of the time it would take to do it in real time.

IMPORTANT: Once you have finished all your counting, be sure to advance the interval before turning off the board. The data for the last interval you counted is not written to memory until you advance to the next interval.

Downloading to the computer

To download your data, first turn on the TDC Ultra and plug a USB cable into it. Then, plug the other end into your computer.

IMPORTANT: Note that the first time you are connecting the Ultra to a computer using the USB port, the USB driver will need to install. This should occur automatically. If not, refer to the full user's manual for more details. The USB driver creates a virtual comm port that you will select in the PETRAPro software.

```
CONTINUE        BAUD
                 EXIT
    Begin local transfer
      at 57.6k baud
```

Run the PETRAPro analysis software on your computer, and prepare it for download by selecting *Read* from the interface screen. On the Main Menu of the Ultra, use the TAB key to highlight DUMP, then press DO. The screen shown to the right is then displayed.

```
BEGIN     EXIT
   Press DO to start
        dump.
Baud Rate = 57.6k
```

Press DO with Continue selected and the screen shown to the left is then displayed.

At this point, the TDC Ultra is ready to download. Make sure PETRAPro is properly set up (refer to the PETRAPro manual if you have any questions on this), then press the DO key. The screen shown to the right will then be displayed.

```
TRANSFER IN PROGRESS

      count#:001
    interval#:001
```

The TDC Ultra starts sending the data to the computer, beginning with the first interval of the first count. The screen shows the count number and interval number that is being transferred. When all of the data has been transferred, the screen returns to the Dump. Assuming the transfer is successful, you can then select EXIT to return to the Main Menu.

Clearing the Memory

The TDC Ultra stores its data in flash memory, and retains the data even if the counter is turned off. However, once the data has been successfully transferred to the computer there is no need to keep it in the TDC Ultra. The only way to clear the data, and make room for new studies, is to use the Clear option. To start this process, select Clear from the Main Menu.

```
COUNT  REVIEW  DUMP
    CLEAR   UTILITIES
Clear memory of all
count data.      -bat: 6.2
```

The first level of protection checks to make sure you pressed the correct key in the Main Menu. Assuming you did, move the highlight to CLEAR and press the DO key. The second (and final) level of protection asks you to confirm that you really want to clear the memory. Again, assuming you do, move the highlight to Confirm and press the DO key. *If, after all this, you clear the memory by accident, don't blame us.* The memory is cleared and the screen shown below is displayed. Press DO and you will then be returned to the Main Menu.

```
CLEAR       EXIT

Clear memory of all
count data.
```

```
CONFIRM       EXIT

Yes, I really want to clear
memory.
```

```
- - Memory Cleared - -

    Press DO to return
      to Main Menu.
```
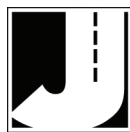
Replacing Batteries

The TDC Ultra is powered by four AA cell batteries. Use of low power electronics in the TDC Ultra makes it possible for the batteries to last for several months, depending on use. Eventually, however, the batteries will need to be replaced. The back of the TDC Ultra contains the battery compartment. The batteries can easily be popped out and replaced.

• **Be very careful to observe the proper polarity when installing new batteries. Leaving incorrectly installed batteries in the Ultra can cause the batteries to burst and leak, damaging the unit.**

• **Do not mix old batteries with new batteries, or mix brands of batteries, when replacing the batteries. This can cause batteries to burst and leak, damaging the unit.**