

DN 6000402
TDP START/STOP
SOFTWARE MANUAL

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ACROAMATICS DOCUMENT HISTORY

The following table indicates major changes made to TDP Start/Stop Software Manual, Acroamatics Document Number DN 6000402, released on December 14, 2004 and contains a record of all revisions made since that date.

DN 6000402 CHANGE HISTORY			
Rev	Date	Action	Name
	12/14/04	Original Issue	MMU
A	3/17/05	Added explanation of "Sync 1st Recorders to Frame Boundary" option.	MMU
B	7/23/08	Added explanation of "Automatic Data File Renaming" option	TR
C	4/30/09	This document now explains how to select multicast or point-to-point UDP socket for network option.	TR
D	4/5/10	Added description of using TdpStart with 1626P	TR
E	4/8/11	Added description of record length function for PCMD and PDSP devices	TR

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CHAPTER 1

TDP START/STOP

TDP Start/Stop (TdpStart) is graphical user interface (GUI) that manages the starting and stopping of data acquisition in an Acroamatics PCI Telemetry Data Processor (TDP). One or more acquisition devices can be started synchronously on a PCM frame boundary, while others can be started and stopped on the fly. TdpStart supports hard disk recording and network multicasting for the Acroamatics 6011605 Programmable Data Stream Processor card, and one or more 6011602 PCM Decommutator cards. TdpStart can also be used on computers with installed Acroamatics 6011626P PCI Multi-Channel Frame Synchronizer cards. TdpStart can start and stop data recording operations on the 1626P cards.

Main Window

The main window contains a row for each card detected. Each Properties button opens a dialog to configure the card's settings like the recording file and multicast address. To control one or more cards, place a checkmark next to each card of interest, then use the Start and Stop buttons. The main features are summarized in the following figure.

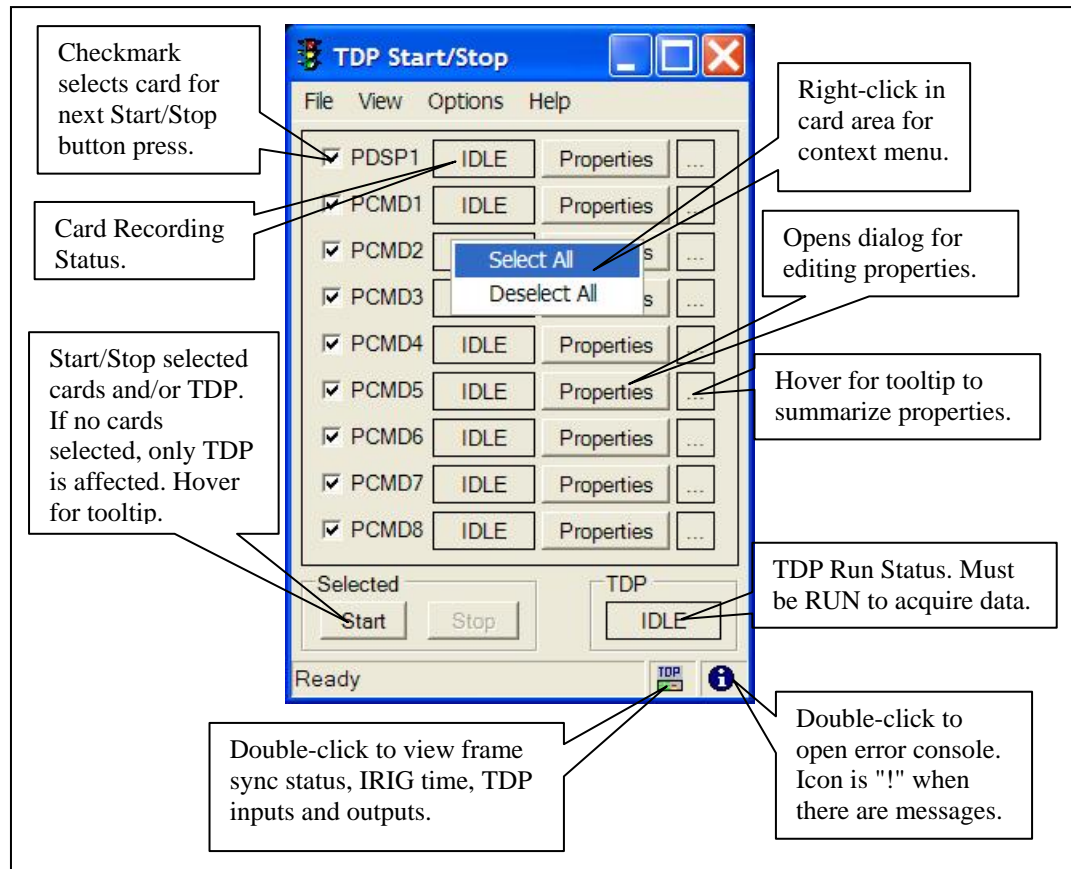


Figure 1-1: Main Screen Callouts

Automatic Last Configuration Recall

At startup, TdpStart automatically recalls its last window size and location. If your system has too many cards to fit in the default window size, resize the window. The new window size will be used the next time you run the program.

TdpStart also recalls its last setup, including the properties of each card, main window card selections, and options set under the Options menu. To save setups in addition to the default last-used setup, use the Save As and Open commands in the File menu.

Start/Stop, TDP Run, and PCM Frame Boundaries

TDP Run is a global signal within the TDP that controls when PCMD cards start producing decommutated data. Upon receiving TDP Run, a PCMD begins to output data at its next frame boundary. If a recording is started at the same time as TDP Run, it will begin at a PCM frame boundary. If it is started after TDP Run, the recording will start at an arbitrary word inside the PCM frame. TdpStart handles TDP Run automatically, but you can influence it using the "Sync 1st Recorders to Frame Boundary" item under the Options menu, as explained in the following paragraphs.

When the "Sync 1st Recorders to Frame Boundary" item under the Options menu is checked, the first cards started will always be synchronized to a frame boundary. If the TDP is already running when these cards are started, TdpStart momentarily stops the TDP, starts the recorders for the selected cards, and restarts the TDP. Any cards started later cannot be synchronized with TDP Run, because to do so would require momentarily stopping the data flow to the cards already recording. Therefore, cards started later do not start on a frame boundary. When the last card is stopped, TdpStart will restore the TDP to the run state it had prior to the start of the first recordings. When no cards are running or selected, the Start and Stop buttons can be used to control just TDP Run.

When the "Sync 1st Recorders to Frame Boundary" item under the Options menu is unchecked, TdpStart does not guarantee that the 1st recordings start at a frame boundary. This mode can be useful when the TDP data is sent to destinations that cannot tolerate a momentary interruption in the data flow, and it is not important that recorded data start at a frame boundary. If the TDP is idle when the 1st cards are started, TdpStart starts the recorders for the selected cards, and then starts the TDP. In this case, the 1st recordings will start at a frame boundary because they were started at the same time as TDP Run. If the TDP is already running when the 1st cards are started, TdpStart will start the recorders for the selected cards without affecting TDP Run. In this case, the recordings will start at an arbitrary word within their respective PCM frames, but data flow to other devices is not interrupted. Any recordings started after the first recordings always start at an arbitrary word within the PCM frame. When the last card is stopped, TdpStart will restore TDP Run to the state it had prior to the start of the first recordings. When no cards are running or selected, the Start and Stop buttons can be used to control just TDP Run.

File Menu

Use the File menu to save and retrieve setups. Setups are saved with the ".tds" extension. The setup file contains a description of how each card was configured, and whether or not it was selected for start/stop.

View Menu

This menu allows you to open other windows related to TdpStart. Select TDP Status to run the TDP Status program, which shows frame sync status, IRIG time, and TDP inputs and outputs. You can also run TDP Status by double-clicking its icon on the status bar. Select Start/Stop Error Console to open the error console window. This window displays all of TdpStart's error

messages. Normally, this window is empty. The Error Console window can also be opened by double-clicking its icon on the status bar. The icon is an "i" if there are no error messages, or an "!" if there are messages.

Options Menu

This menu contains the "Sync 1st Recorders to Frame Boundary" item, which influences how TdpStart handles the TDP Run signal. See the section "Start/Stop, TDP Run, and PCM Frame Boundaries" for a complete discussion.

PDSP Properties

This dialog configures a PDSP card for recording. If a PDSP card is installed, open this dialog by pressing its Properties button on the main window. The main features are summarized in the following figure.

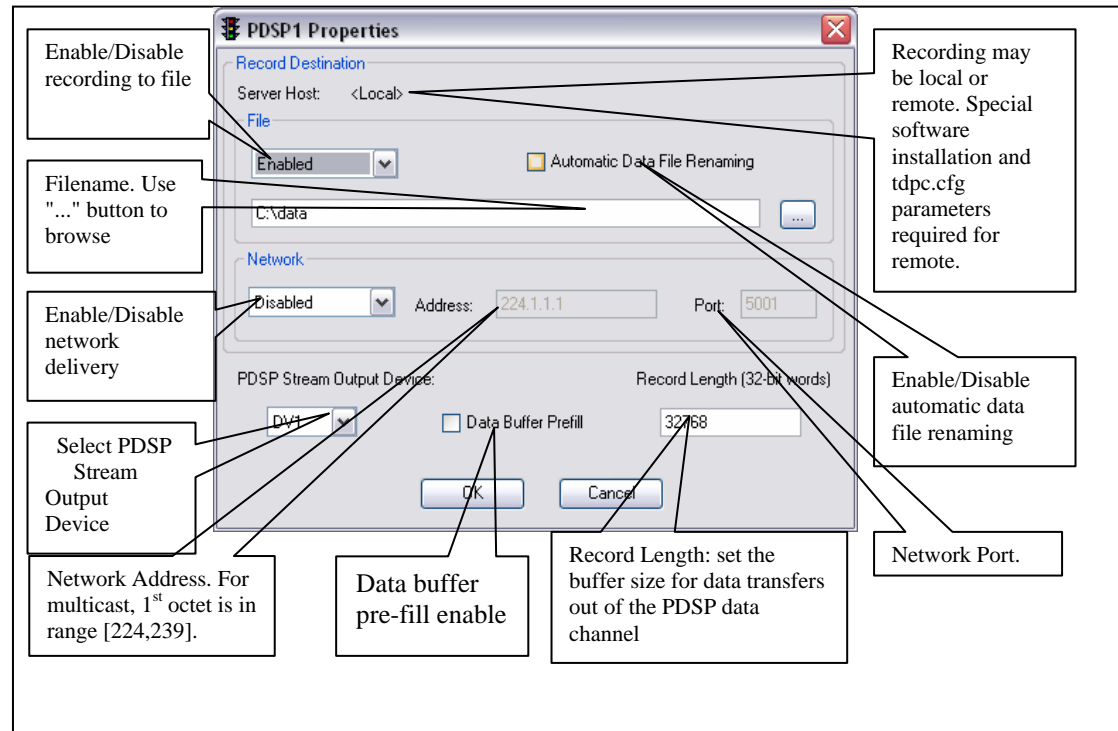


Figure 1-2: PDSP Properties

Record Destination

The card may be installed either in the local computer, or a computer on the local area network (LAN). The recording can be made to a file, and/or a network destination.

Server Host

To record using a card installed in the local computer, the TDP software should be installed using the standard PCI Telemetry Operations Installation, Acroamatics part number 6065112. No special tdp.cfg setup is required.

To record using a card in a remote computer, you must install on the local computer Acroamatics part number 6065045, Remote Display and Operation. There are two parameters that must be set in the local computer's `tdpc.cfg` file to enable remote control. These may be set during the Remote Display and Operation installation, or after installation by editing the file `C:\tdpsys\tdpc.cfg`. For example, if the card is installed in a remote computer named TDP01, the local computer must have the following entries in the `C:\tdpsys\tdpc.cfg` file:

```
ACRO_RECORD_SERVER_HOST=TDP01
ACRO_TM_SERVER=TDP01
```

You must restart `TdpStart` for changes to take affect.

File

To record to file, select Enabled from the dropdown list and enter the filename in the textbox. If the Server Host is <Local>, you can use the ... button to browse for the file destination.

Data File Renaming

To protect against the possibility of overwriting a data file, check the box titled “Automatic Data File Renaming”. When this mode is selected and you have chosen a file name that names an already existing file, the name you have chosen will be modified so that it does not match the name of an existing file. This is done by adding a three digit suffix to the file base name. For example if the file name is `C:\FlightTest` it could be renamed `C:\FlightTest001`. If the file name is `c:\Flight.Tst` it could be renamed `C:\Flight001.Tst`.

If this mode is not selected the new data file will not be renamed and any preexisting file of the same name will be overwritten.

Network

To send the data to a multicast or point-to-point UDP address, choose Enabled from the dropdown list, and fill in the Address and Port text boxes. Valid multicast addresses have a value between 224 and 239 in the 1st octet. Other addresses will select point-to-point UDP.

PDSP Stream Output Device

To select one of four PDSP stream output devices use the “Output Stream Device” combobox to select DV1, DV2, DV3, or DV4.

Record Length

Use this control to set the length of the DMA transfers out of the PDSP device. Your entry here is the number of 32-bit words for the transfers. The data recorder operates most efficiently at high data rates using large record lengths. Using smaller record lengths is more suitable for slow rate data. The largest number allowed for record length is 65536, the smallest 128. Also, when recording data to a file on your hard disk you will see better performance when the record length selection is an integer multiple of 128 32-bit words (512 bytes).

Data Buffer Pre-fill

When the data buffer pre-fill mode is enabled the record server will pre-fill each data buffer with a fill pattern before transferring data from the PDSP card into the data buffers. This makes it possible for the data record server to recognize the boundary between fresh data and stale data in the final data buffer processed during a data record operation. When this mode is enabled the record server will write out to disk any fresh data from a partially filled final data buffer. By default, this mode is not selected. When this mode is not selected data from partially filled final

data buffers is not written out. Since this mode causes delays in the record server data processing while it pre-fills data buffers, the use of this mode is advisable only when your data rate is low enough to allow its use without data overflow. If this mode is used with data rates that are too high, data overflow and loss of data could occur. The rate at which data overflow can occur using this mode will vary from machine to machine, and depends on factors such as CPU speed, disk speed, available memory and other processing underway on the computer. Another thing to consider when using the “Data Buffer Pre-fill” option is the choice of record length. To minimize the chance for data overflow use larger record lengths with the “Data Buffer Pre-fill” mode option.

PCMD Properties

This dialog configures a PCMD card for recording. For any PCMD card installed, open this dialog by pressing its Properties button on the main window. The main features are summarized in the following figure.

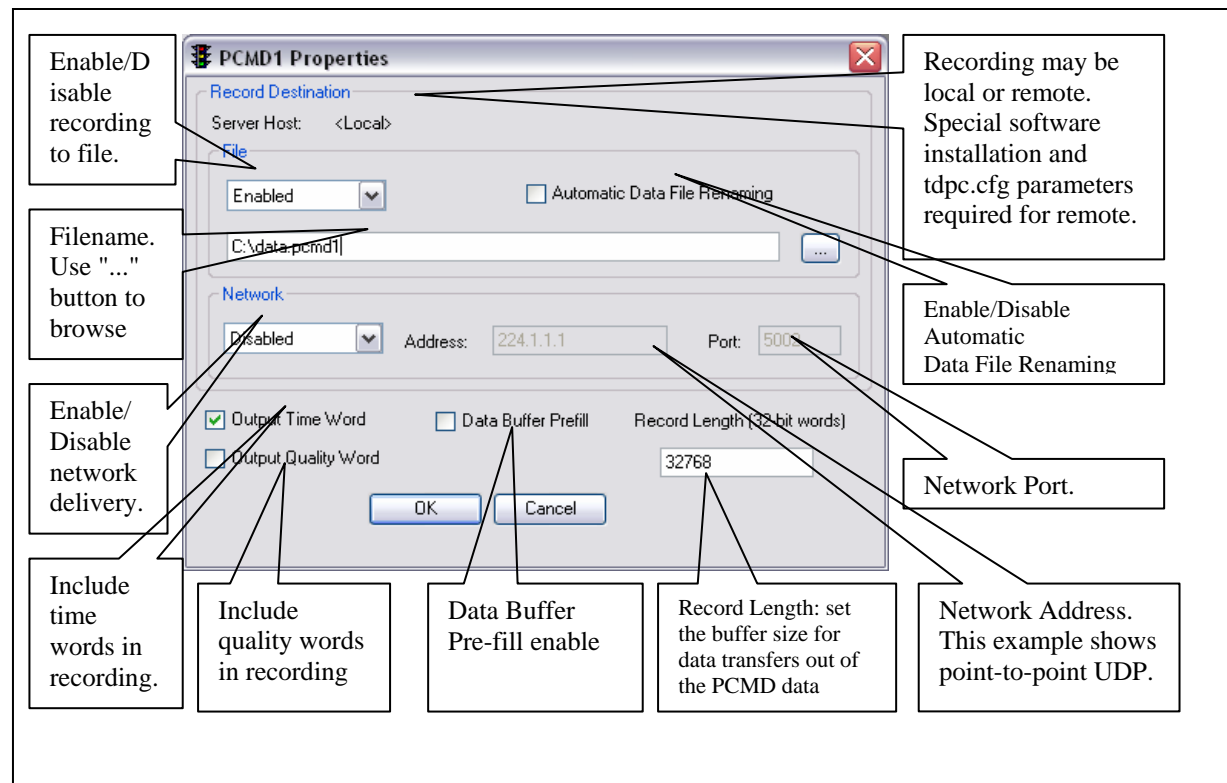


Figure 1-3: PCMD Properties

Record Destination

This setup is exactly the same as for the PDSP. See the Record Destination section and its subsections under PDSP Properties for a description.

Output Time Word

When a time card is installed, time words can be inserted into the data stream. A time word with ID 0x1FFE is generated once per second, and 0x1FFF once per millisecond. The format of the time words is described in DN6000337 in the section Data Format Control Register.

Output Quality Word

The Quality Word is a status word inserted in the data stream after the mainframe sync. It has ID 0x1FE0. Use this checkbox to enable Quality Word insertion. The format of the Quality Word is described in the Quality Word section of DN6000337.

Record Length

Use this control to set the length of the DMA transfers out of the PCMD device. Your entry here is the number of 32-bit words for the transfers. The data recorder operates most efficiently at high data rates using large record lengths. Using smaller record lengths is more suitable for slow rate data. The largest number allowed for record length is 65536, the smallest 128. Also, when recording data to a file on your hard disk you will see better performance when the record length selection is an integer multiple of 128 32-bit words (512 bytes).

Data Buffer Pre-fill

When the data buffer pre-fill mode is enabled the record server will pre-fill each data buffer with a fill pattern before transferring data from the PCMD card into the data buffers. This makes it possible for the data record server to recognize the boundary between fresh data and stale data in the final data buffer processed during a data record operation. When this mode is enabled the record server will write out to disk any fresh data from a partially filled final data buffer. By default, this mode is not selected. When this mode is not selected data from partially filled final data buffers is not written out. Since this mode causes delays in the record server data processing while it pre-fills data buffers, the use of this mode is advisable only when your data rate is low enough to allow its use without data overflow. If this mode is used with data rates that are too high, data overflow and loss of data could occur. The rate at which data overflow can occur using this mode will vary from machine to machine, and depends on factors such as CPU speed, disk speed, available memory and other processing underway on the computer. Another thing to consider when using the “Data Buffer Pre-fill” option is the choice of record length. To minimize the chance for data overflow use larger record lengths with the “Data Buffer Pre-fill” mode option.

MCFS Properties

This dialog configures a MCFS (Model 1626P PCI Multi-Channel Frame Synchronizer) card for recording. If a MCFS card is installed, open this dialog by pressing its Properties button on the main window. The main features are summarized in the following figure.

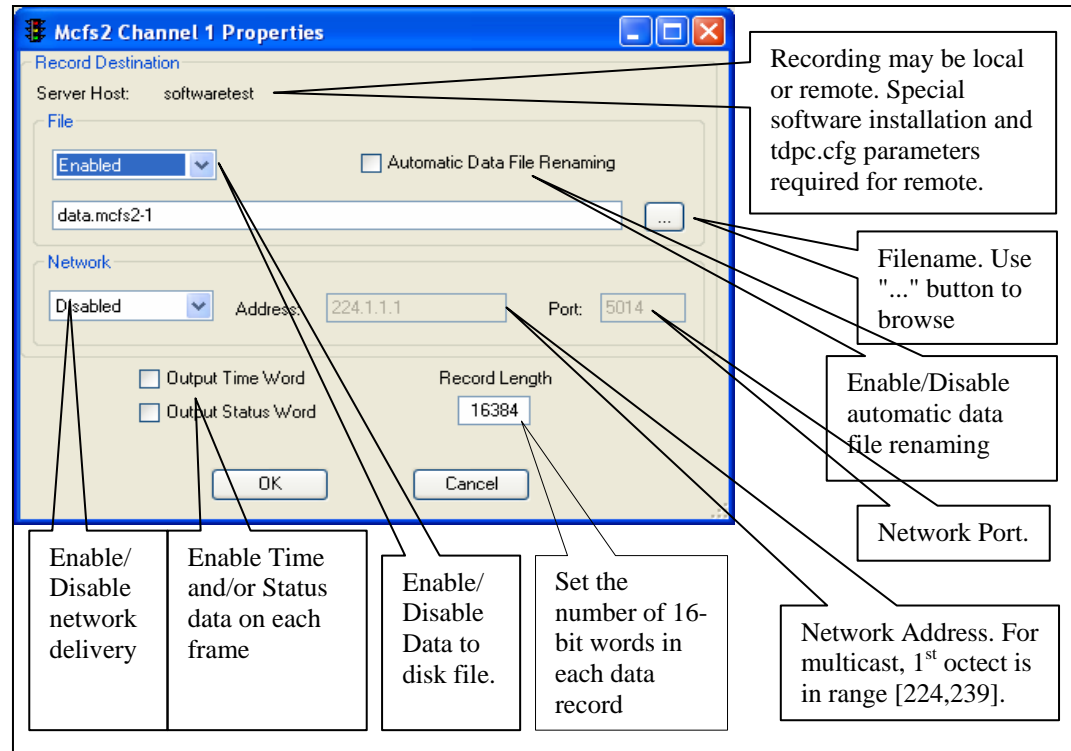


Figure 1-4: MCFS Properties

Record Destination

The card may be installed either in the local computer, or a computer on the local area network (LAN). The recording can be made to a file, and/or a network destination.

Server Host

To record using a card installed in the local computer, the MCFS software should be installed using the PCI Multi-Channel FrameSynchronizer Installation, Acroamatics part number 6065154. No special tdpc.cfg setup is required.

To record using a card in a remote computer, you must install on the local computer Acroamatics part number 6065045, Remote Display and Operation. There are two parameters that must be set in the local computer's tdpc.cfg file to enable remote control. These may be set during the Remote Display and Operation installation, or after installation by editing the file C:\tdpsys\tdpc.cfg. For example, if the card is installed in a remote computer named TDP01, the local computer must have the following entries in the C:\tdpsys\tdpc.cfg file:

ACRO_RECORD_SERVER_HOST=TDP01

ACRO_TM_SERVER=TDP01

You must restart TdpStart for changes to take affect.

File

To record to file, select Enabled from the dropdown list and enter the filename in the textbox. If the Server Host is <Local>, you can use the ... button to browse for the file destination.

Data File Renaming

To protect against the possibility of overwriting a data file, check the box titled “Automatic Data File Renaming”. When this mode is selected and you have chosen a file name that names an already existing file, the name you have chosen will be modified so that it does not match the name of an existing file. This is done by adding a three digit suffix to the file base name. For example if the file name is C:\FlightTest it could be renamed C:\FlightTest001. If the file name is c:\Flight.Tst it could be renamed C:\Flight001.Tst.

If this mode is not selected the new data file will not be renamed and any preexisting file of the same name will be overwritten.

Network

To send the data to a multicast or point-to-point UDP address, choose Enabled from the dropdown list, and fill in the Address and Port text boxes. Valid multicast addresses have a value between 224 and 239 in the 1st octet. Other addresses will select point-to-point UDP.

Time and Status

The 1626P card can add a 64-bit time word to each frame of data on the output. Select this option by setting the check for “Output Time Word”. The 1626P can also add a 32-bit status word to each frame of data. The status includes 16-bits of frame synchronizer status and a 16 bit frame counter. Select this option by setting the check for “Output Status Word”.

Record Length

You can set the record length for data transfers out of the 1626P channel by using the “Record Length” edit control. This number specifies a count of 16-bit words. You must enter an even number. The maximum allowed is 131072.