

Using “Console” mode to communicate with ATI-TDA-100P series Penetrometers.

If you desire to capture data, or if you need to pass instructions to your TDA-100P series unit, HyperTerminal or a similar serial communications program will need to be used.

One of the easiest programs for capturing data is probably Windows HyperTerminal available in the Windows OS inclusive through version XP. See your Windows documentation for version specific setup procedures. This program can be used to communicate directly with your unit to capture data or send RS-232 commands. A 9-pin to 9-pin serial cable with a ‘Null modem’ configuration is required for this function. If a null modem cable is not readily available a separate null adapter may be used in conjunction with a standard serial cable.

For newer computers there are also many freeware and purchase options to choose from if desired.

PuTTY (<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>)

RealTerm (<http://realterm.sourceforge.net/>)

TeraTerm (<https://osdn.net/projects/ttssh2/releases/>)

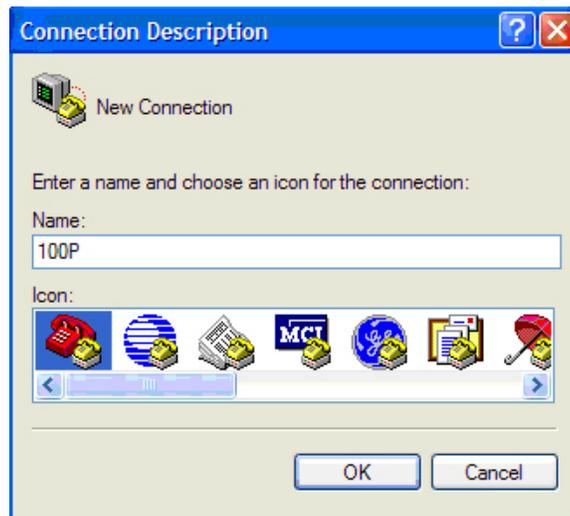
From the terminal program the data may be imported into a commercially available spreadsheet program and saved or formatted as desired.

Windows HyperTerminal is used for the following examples due to its industry familiarity.

Setting up Windows HyperTerminal to communicate with ATI-TDA-100P Series penetrometers.

HyperTerminal is supplied with the Windows operating system. You can download a copy from Hilgraeve (the HyperTerminal developer located at www.hilgraeve.com) free of cost if this program is missing. The free program is called “HyperTerminal Private Edition”.

1. Start the HyperTerminal program. The executable link is normally located in the Programs / Accessories / Communications section of the Windows START menu.
2. You will be prompted for a name and icon for HyperTerminal's® setup configuration. Once saved, this configuration can be recalled in future sessions. Intuitive file names containing unique identifiers work best for most users. Click OK.



3. Select the appropriate COM port from the “Connect using” menu. Click OK.



4. Select the individual Port settings as shown below. Then click OK.

- ✓ Bits per second: 9,600
- ✓ Data bits: 8
- ✓ Stop bits: 1
- ✓ Flow control: None



5. Connect the serial null-modem cable to the female 9-pin serial port connection located at the rear of the TDA-100P unit. You should now have a “live” serial connection.

Console Commands

The TDA-100P series provides a mechanism to issue commands and set and recall operating parameters through the RS-232 serial communications port. This area documents the available functions.

The console mode is initiated in one of two ways:

- 1) Through the Maintenance Mode Security/Console Menu.
- 2) By request through the serial port. If an ASCII ESC (Escape, hexadecimal 1B) character is received while the TDA-100P is idle, the machine will issue a “READY?” prompt and initiate console mode. If the machine is busy when the ESC character is received, the character will be held until the machine is idle.

When the TDA-100P is ready to accept a new command, it will issue a prompt string to the serial port. The prompt string is “READY?” Characters sent to the serial port prior to the receipt of the prompt will be ignored. Each command sent to the serial port must be terminated by a carriage return character (0D in hexadecimal).

The available basic commands are: VER, PROMPT, DUMP, LOAD, SET, and END. The function of each command is described below. In the descriptions references to “PPPPP” refers to one of the operating parameters listed in the 100P Parameter Table below. Also, “VVVVV” represents the value of the parameter or the value to be assigned to the parameter. The values can take several forms depending on the parameter. The forms are:

- | | |
|------------|--|
| Integer | a sequence of decimal digits. For example, “150”. |
| Real | a sequence of decimal digits with an optional decimal point. For example, “2.3”. |
| True/False | A true value is entered as a “Y” (for “yes”) or an “N” (for “no”). |

BASIC COMMAND SET - Note: Remember that all commands are case-sensitive

VER	Displays the version of the software.
END	Terminates console entry mode and returned control to the 100 front panel buttons.
DUMP	Displays the value of the 100P's operating parameters in the form PPPPP=VVVVV. Each parameters is displayed on a line by itself followed by a carriage return and line feed (hexidecimal 0D and 0A, respectively).
LOAD	Accepts a series of operating parameters in the same form as that produced by the DUMP command.
SET	Used to set the value of an individual operating parameter. The form of the command is "SET PPPPP=VVVVV". No additional spaces are allowed. See the Advanced Command Set below.
PROMPT	This command will cause the 100P to ask for changes to all of the parameters. For each parameter, the 100P will display "PPPPP[VVVVV]=", where the PPPPP is the parameter name and VVVVV is the current value of the parameter. If the user wishes to leave the parameter unchanged, the he can enter a carriage return. If he wishes to change the value, enter the new value of the parameter followed by a carriage return

ADVANCED COMMAND SET

UNIT_ID	Is numeric identifier that can be used to distinguish one TDA-100P from another. This number is included in the result output string reported on the serial port.
PENMAX	Maximum allowed penetration during a test. An alarm will be raised if this limit is exceeded.
PENMAX_ON	"Y" if maximum penetration limit is enabled; if "N" the upper limit will not be tested.
PENMIN	Minimum allowed penetration during a test. An alarm will be raised if the sample penetration falls below this limit.
PEN_LO_ON	"Y" if minimum penetration limit is enabled; if "N" the upper limit will not be tested.
RESMAX	Maximum allowed resistance during a test. An alarm will be raised if this limit is exceeded.
RESMAX_ON	"Y" if maximum resistance limit is enabled; if "N" the upper limit will not be tested.
RESMIN	Minimum allowed resistance during a test. An alarm will be raised if the sample resistance falls below this limit.
RESMIN_ON	"Y" if minimum resistance limit is enabled; if "N" the upper limit will not be tested.
FLOW_TOL	Sets the allowable variation of the displayed flow reading, during testing.
FLOW_TOL_ON	"Y" if flow tolerance limit is enabled; if "N" the limits will not be tested.
CYC_TO_CAL	Number of tests performed between mandatory recalibration.
CYC_TO_CAL_ON	"Y" if the mandatory calibration based on test count is enforced.
LOAD_TIME	Delay time (in seconds) allowed for aerosol loading.
LOAD_TIME_ON	"Y" if load time will be used. If "N", load time will be ignored.
SAMP_TIME	Sample testing time (in seconds).
SAMP_TIME_ON	"Y" if sample testing is limited to the value of "SAMP_TIME". If "N", testing will run continuously until a limit is exceeded or the chuck is opened.
EXT_LOAD_TIME	Extended load time (in seconds). Extended load time is used on the first test after calibration and after a limit error.

Parameters below this line will only appear if the trace level (TLEVEL) parameter is greater than one. These parameters are normally set during the calibration process and should not be changed manually. They are displayed for information only.

ZERO_OFF	An offset in A/D counts that will be applied to the LSC reading.
ZERO_OFF_ON	"N" disables the zero offset,
CAL_100	100% LSC Reading from gravimetric calibration
FLOWCON	Flow calibration slope constant
FLOWZERO	Zero offset for flow sensor (in counts)
GRAVCON	LSC slope constant created by gravimetric calibration
GRAVHI	The upper limit of the 100% penetration reading.
GRAVLO	The lower limit of the 100% penetration reading.
LSC_DAC	LSC DAC Setting
RESCON	Pressure (resistance) calibration slope constant.
LSC_LOWLIM	Lowest allowable LSC reading (stray light)
TLEVEL	Trace Level determines the amount of diagnostic information displayed through the serial port. Available levels are 0, 1, and 2, representing low (normal operating level), basic and maximum amounts of output.
QZT	Quick Zero Tolerance is a factor applied to the LSC reading returned at the start of each test cycle to determine if the LSC state has recovered from the previous test. 0=Off. Default value of 6.
BPSENSTYPE	Specifies the type of barometric pressure sensor installed. 0=None (Default), 1 = MPX4105A, 2= MPX5100A
FLOWSENSTYPE	Specifies the mass flow meter installed. A=Alicat (Default), T=Teledyne Hastings
ALT100PCT	"N" disables the non-encapsulating feature (Default). Default setting is N (Disabled). "Y" enables non-encapsulating feature utilizing an optional dedicated valve for obtaining 100% during daily 'PenCal' routine.