DTM-CFG Configuration Software for

DTM Distributed Transmitter-Monitor

User Manual

Installation, Operation, Maintenance

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Table Contents

DTM-CFG Software Introduction

DTM-CFG is the configuration and calibration software used to configure all DTM modules. It can be connected to the DTM modules with the interface of a USB-RS485 cable kit. The DTM-CFG software combined with the DTM96 allows the user to remotely interface with 32 DTM devices networked together in the field.

DTM-CFG Features

Module Configuration

- ✓ Module type selection
- ✓ Module ID address
- ✓ Modbus Range
- ✓ Communication parameters: baud rate, stop bit, etc
- ✓ Automatic or manual search of communication port
- ✓ English or metric unit selection
- ✓ Password and Security

Operation Configuration

- ✓ Transducer and sensitivity selection
- ✓ Measurement unit selection
- ✓ Full-scale
- ✓ Dual alarm set-points, alarm time delay, alarm latching
- ✓ Relay energized/de-energized, Relay bypass

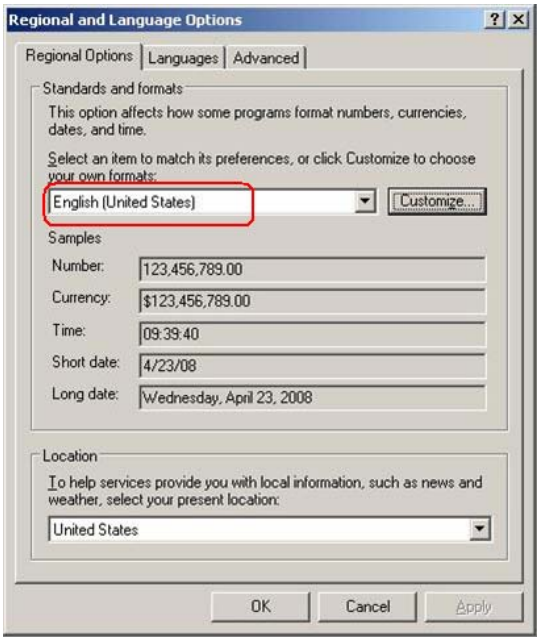
Maintenance Calibration

- ✓ ZERO calibration, SPAN calibration
- ✓ Probe linearization calibration
- ✓ Real-time overall and status display
- ✓ Record of overall and status
- ✓ Configuration parameters saved as file

DTM-CFG Running Environments

- **Recommended Operating System:** Windows 2000, Windows XP SP2 or a later version
- **Processor:** 1.7GHz or faster
- **Memory:** 512MB or more
- **Hard Disk:** 40G or more

- **Drive:** A DVD Drive
- **Screen Resolution:** 1280*1024 high color, 32-bit (Recommended)
- **Regional Options:** You should set “Standards and formats” on **Regional Options** tab to “English (United States)”. See picture below:



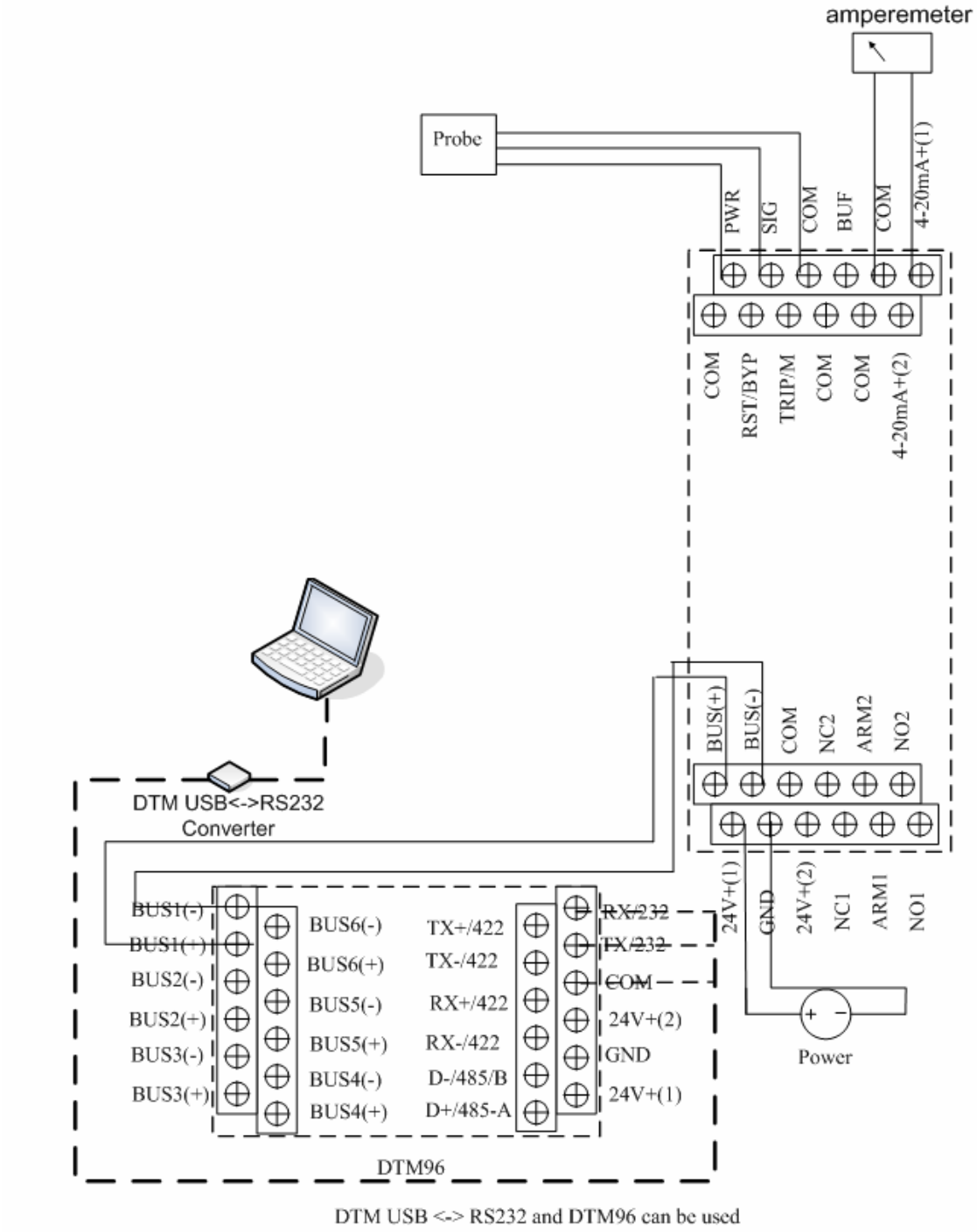
Please follow the steps to check or change the setting:

1. Open **Control Panel**;
2. Double click **Regional Options** tab;
3. On **Regional Options** tab, select “English (United States)” from combo box of “Standards and formats”.

DTM-CFG Configuration Software Installation

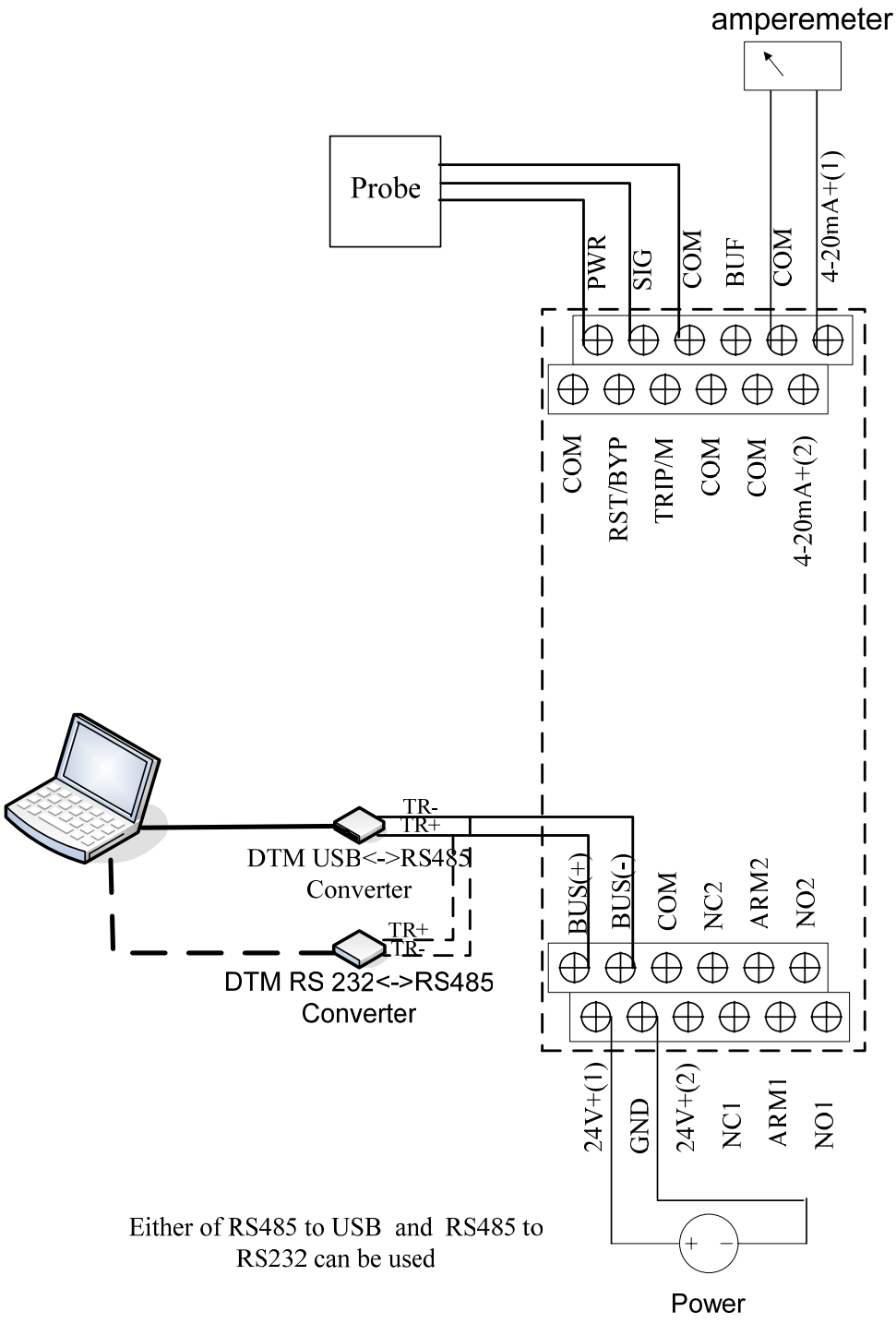
System Wiring Diagram for Configuration

DTM with DTM96



DTM USB <-> RS232 and DTM96 can be used

DTM without DTM96

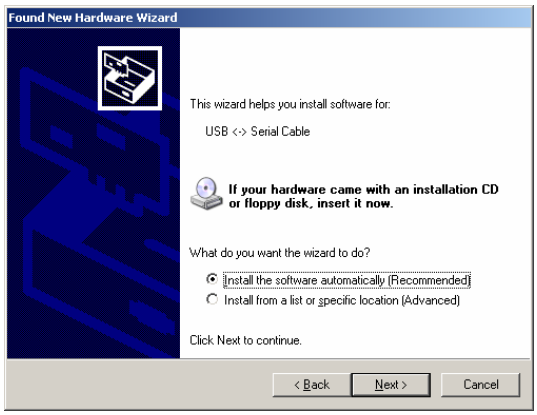


Load USB-RS485 or USB-RS232 Converter Driver

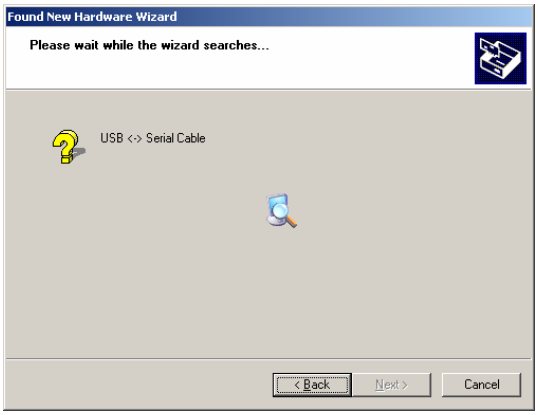
Please follow the steps to load USB-RS485 or USB-RS232 converter driver.

1. Put the DTM-CFG installation CD into the DVD-ROM. Connect USB-RS485 or USB-RS232 converter to a spare USB port on your computer. The computer will launch the following picture. Select “No, not this time”. And then click **Next** button.

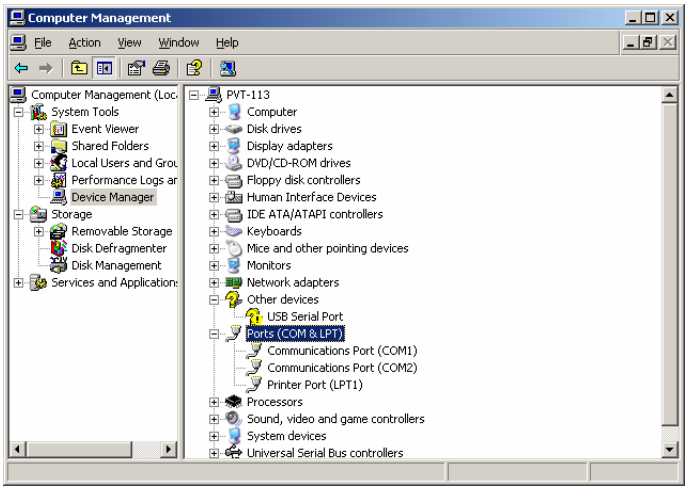
2. On picture below, select “Install the software automatically (Recommended)” and then click **Next** button.



3. The computer now is beginning to scan the installation file and then install the USB-RS converter driver.

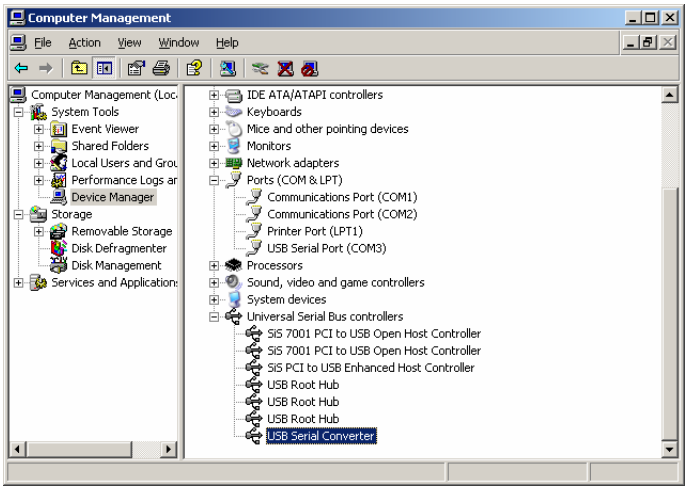


Picture below shows the condition that the USB-RS converter driver hasn’t been installed. To view the information, right click “My Computer” and select “Manage”. On “Computer Management” window, navigate “Device Manager” and then select “Other devices/USB Serial Port”.



4. The installation of USB-RS converter driver was finished. Click **Finish** button.

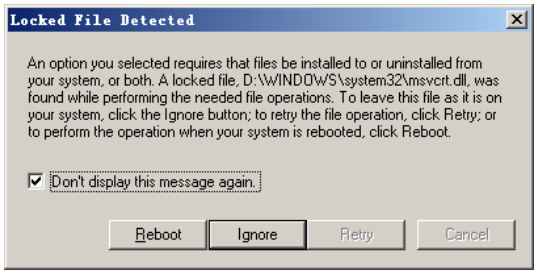
After the USB-RS converter driver was installed, the computer will begin to install COM port. And installation process is the same as the installation of USB-RS converter driver, so we don't repeat it here. After the two were installed, see picture below: a new USB Serial Port "COM3" is added below "Ports (COM&LPT)" and "USB Serial Converter" is added below "Universal Serial Bus controllers".



Install DTM-CFG Software

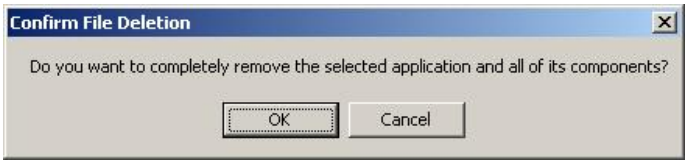
Put the DTM-CFG installation CD into the DVD-ROM. From the root folder, open “DTMCFG-Setup” folder and double click **Setup.exe** to start the installation program. Follow the information on the related windows to install the software.

NOTE: If “Locked File Detected” window (see picture shown like below) is launched during the installation process, mark “Don’t display this message again” and then click **Ignore** button.

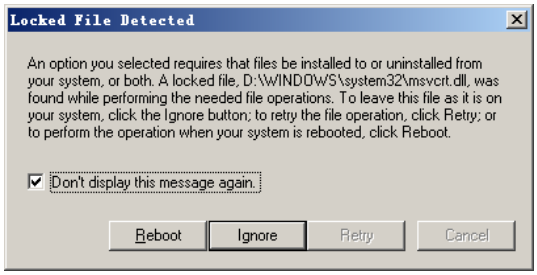


Uninstall DTM-CFG Software

Select **Start**->**All Programs**->**DTM System**->**Uninstall DTM-CFG** command, and then click **OK** button on “Confirm File Deletion” window.



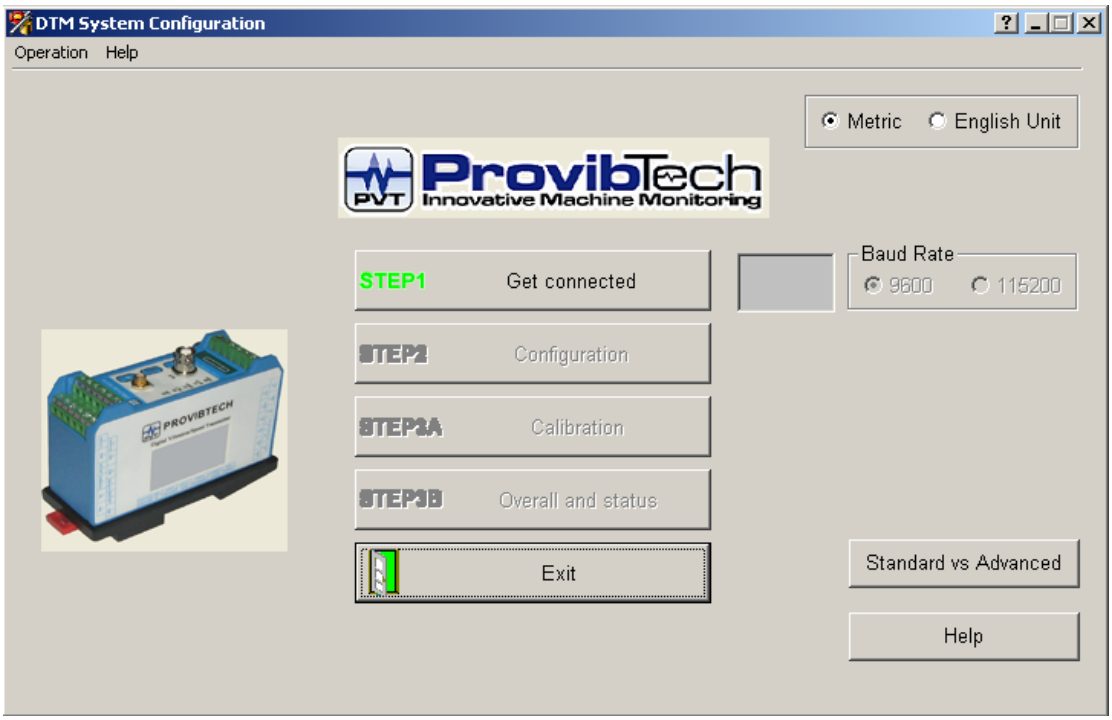
NOTE: If “Locked File Detected” window (see picture shown like below) is launched during the uninstallation process, mark “Don’t display this message again” and then click **Ignore** button.



DTM-CFG Standard Edition Operation

Start DTM-CFG Standard

Double click the shortcut icon of DTM-CFG on the desktop or select **Start**->**All Programs**->**DTM System**->**DTM-CFG** to start the software. A few seconds later, the main window will appear:



After start the software, you should set the DTM ID first:

1. Select **Advanced** command from **Operation** menu, and then click **Yes** button on the "CAUTION" window;
2. Select **Module ID Setup** command from **Module-Configuration** menu, and then type the correct ID of the connected DTM on the "DTM ID Setup" window. Finally, click **OK** button;
3. Select **Standard** command from **Operation** menu to return the main window of the DTM-CFG standard edition.

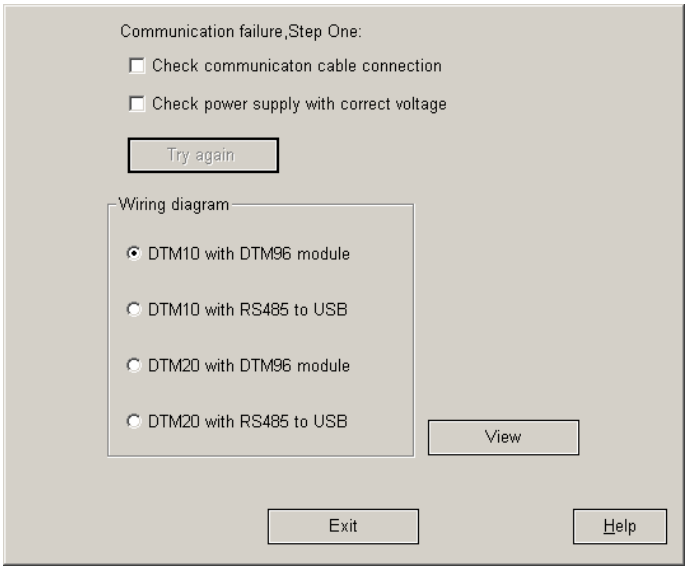
The topics covered to operate DTM-CFG standard edition are:

- Step1: Get connected
- Step2: Configuration
- Step3A: Zero calibration
- Step3B: Overall and status

Get connected

The default baud rate is 115200 bits/second, the alter baud rate is 9600 bits/second

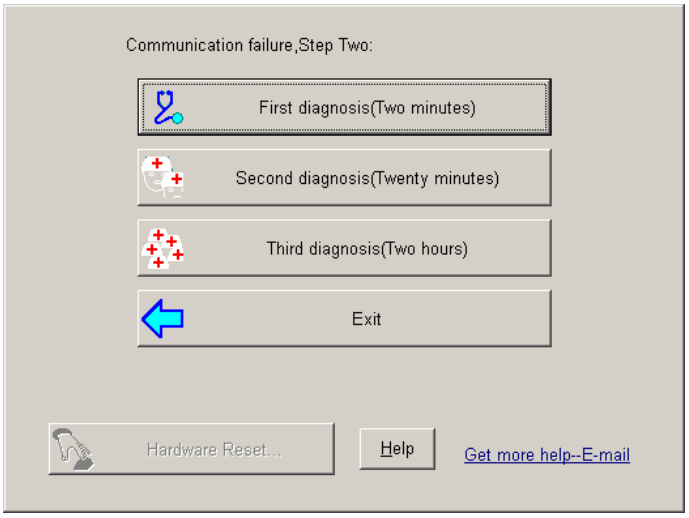
Ensure DTM device is correctly connected to the computer. Click **STEP1 Get connected** button to launch the searching communication parameter window. See picture below:



Description of the options on the window:

- ✓ **Check communication cable connection:** Mark this option to detect whether the system wiring is good.
- ✓ **Check power supply with correct voltage:** Mark this option to detect whether the power supply is good.
- ✓ **Try again (Button):** This button is enabled only when the two options above are both marked. Click this button to connect the DTM-CFG and DTM device again.
- ✓ **DTM10 with DTM96 module:** Select this option and then click **View** button to display System Wiring Diagram for Configuration-DTM10 with DTM96 module.
- ✓ **DTM10 with RS485 to USB:** Select this option and then click **View** button to display System Wiring Diagram for Configuration-DTM10 without DTM96 module.
- ✓ **DTM20 with DTM96 module:** Select this option and then click **View** button to display System Wiring Diagram for Configuration-DTM20 with DTM96 module.
- ✓ **DTM20 with RS485 to USB:** Select this option and then click **View** button to display System Wiring Diagram for Configuration-DTM20 without DTM96 module.

Please mark the two check boxes in window above and click **Try again** button, and then the software will re-connect the DTM-CFG software and DTM device. If the communication still failed, following window is launched.



Description of the buttons on the window:

- **First diagnosis (Two minutes)**

It is the lowest level of diagnosis. Click this button and software will scan the available communication parameters such as baud rate, COM port….and so on. The process may take you two minutes. If the communication succeeded, the software will go back to the main window. If the communication still failed, you are recommended to try the Second diagnosis.

- **Second diagnosis (Twenty minutes)**

More advanced searching tools are used in the Second diagnosis. Also more time are needed to finish the Second diagnosis. You may wait twenty minutes. The software will go back to the main window if the communication succeeded. If the communication still failed, you are recommended to try the Third diagnosis.

- **Third diagnosis (Two hours)**

It is the highest level of diagnosis and will take you two hours.

- **Hardware Reset:**

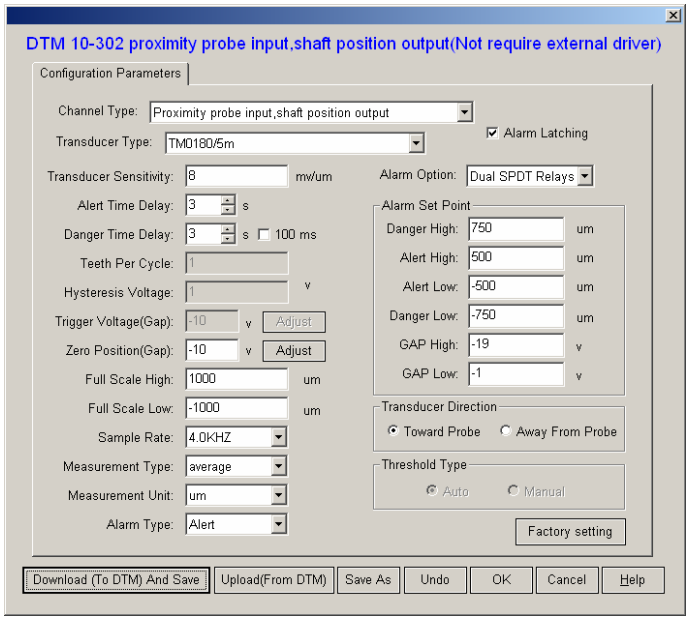
The DTM-CFG software with the current or a former version doesn't support this function. It may be available in the future release.

Configuration

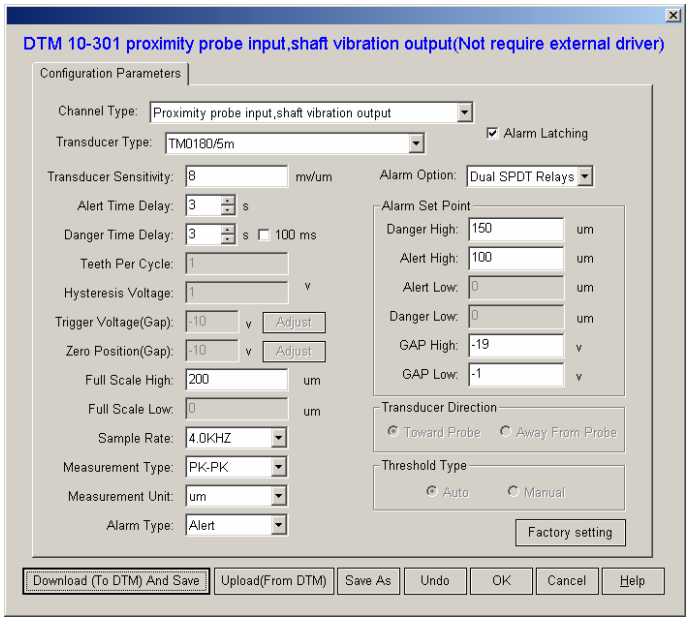
STEP2 Configuration button on main window will be enabled if DTM-CFG software and DTM device can normally communicate with each other. Click this button and configuration window about the current DTM device will be launched. Moreover, parameters of the current DTM device are uploaded to the configuration window.

Factory Default Settings for Different Type of DTM Device

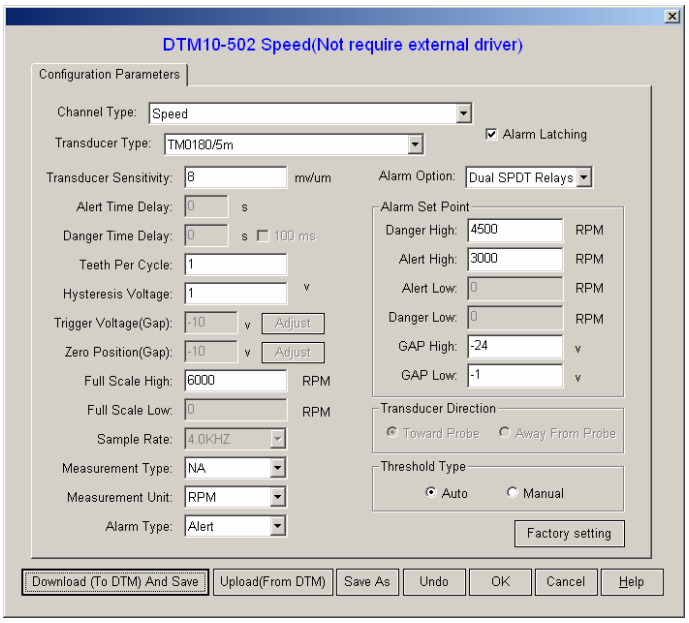
- ***DTM10-C0/DTM10-302 Default Setting***



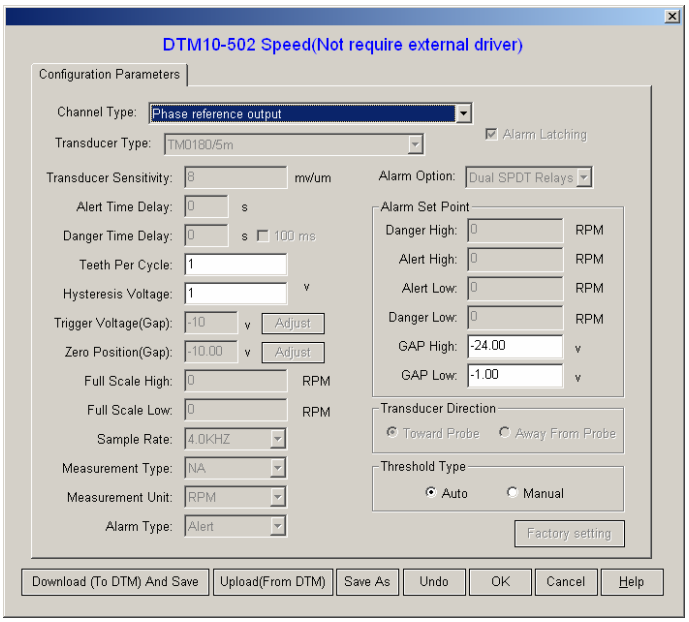
- ***DTM10-C0/DTM10-301 Default Setting***



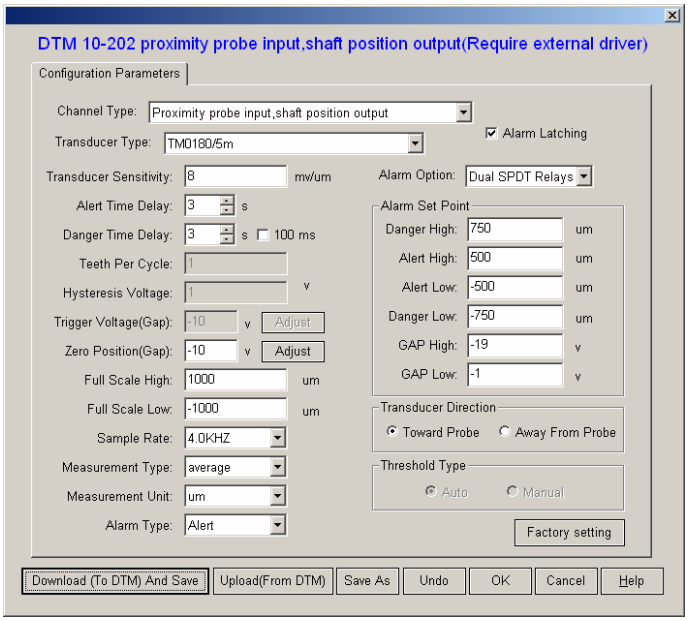
- ***DTM10-C0/DTM10-502 Default Setting（channel type is "Speed"）***



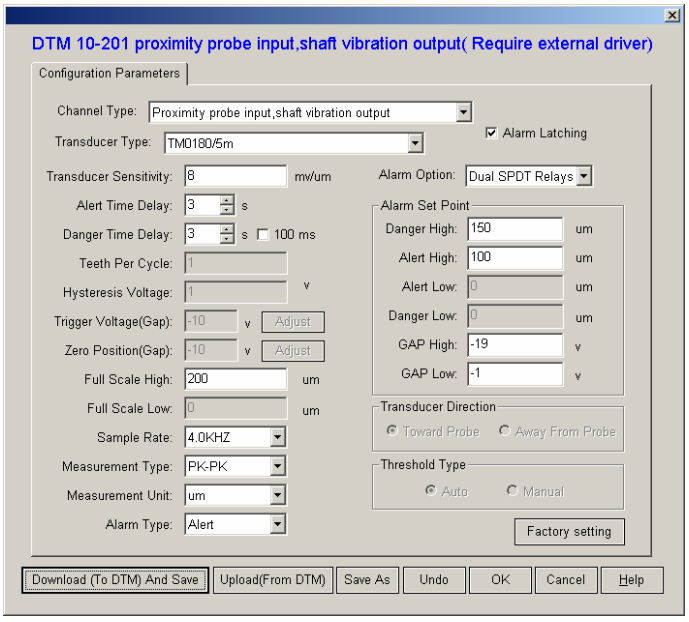
- ***DTM10-C0/DTM10-502 Default Setting（channel type is "Phase Reference Output"）***



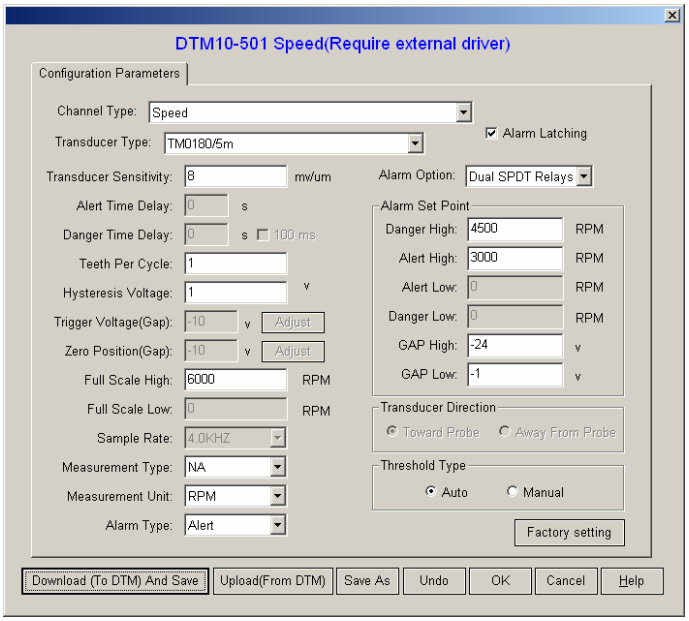
- ***DTM10-C1/DTM10-202 Default Setting***



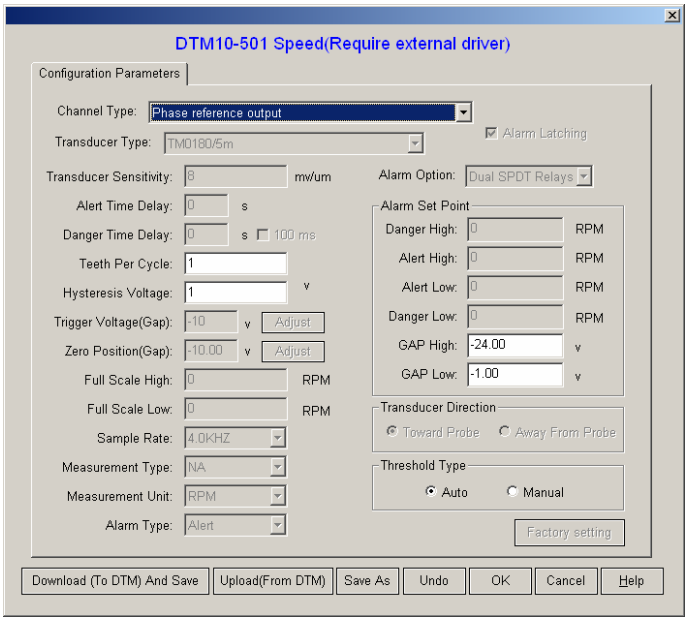
- ***DTM10-C1/DTM10-201 Default Setting***



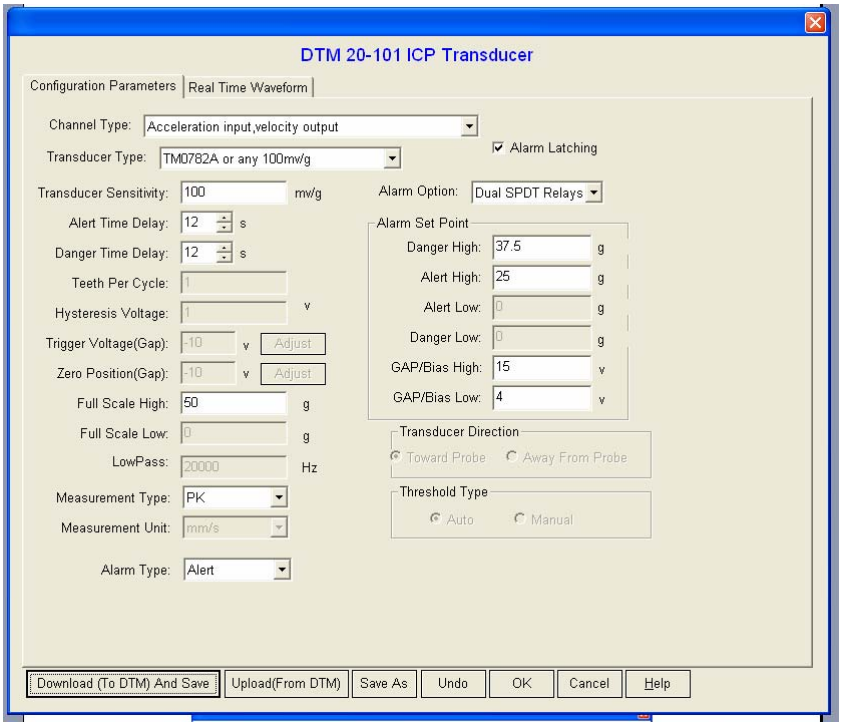
- ***DTM10-C1/DTM10-501 Default Setting（channel type is "Speed"）***



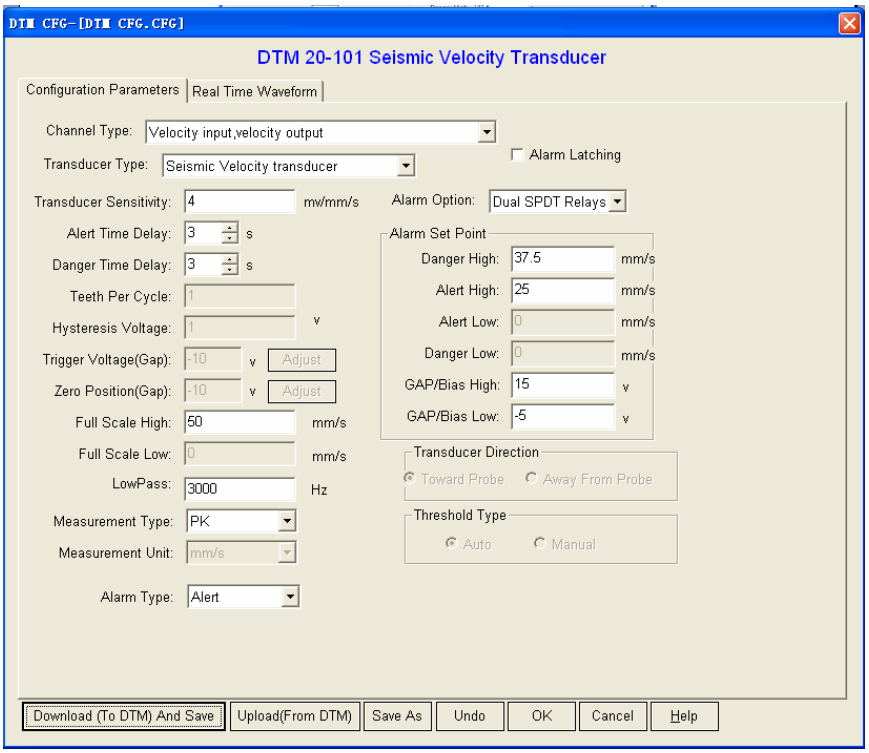
- ***DTM10-C1/DTM10-501 Default Setting（channel type is "Phase Reference Output"）***



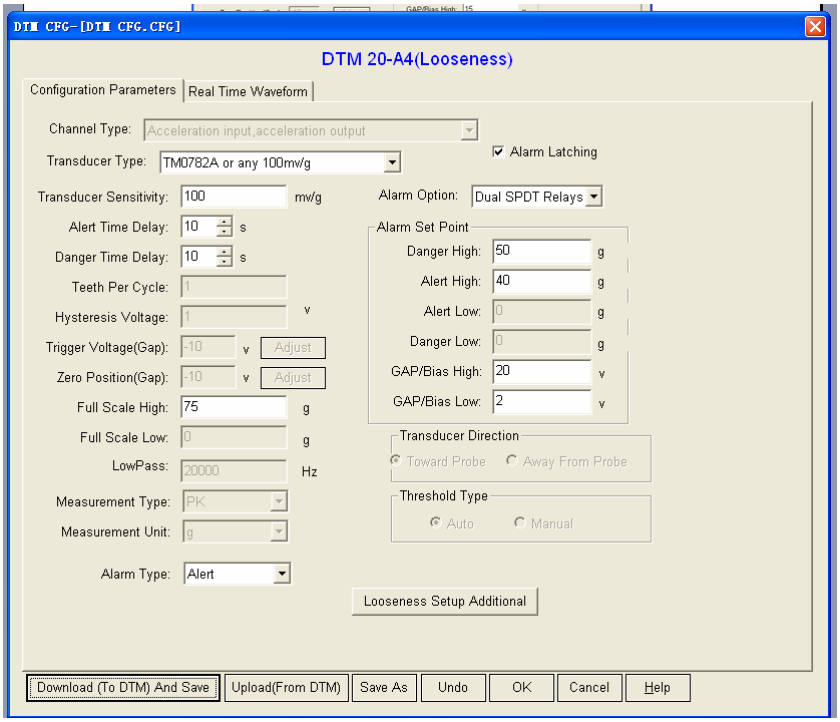
- ***DTM20/DTM20-101 ICP Transducer Default Setting***



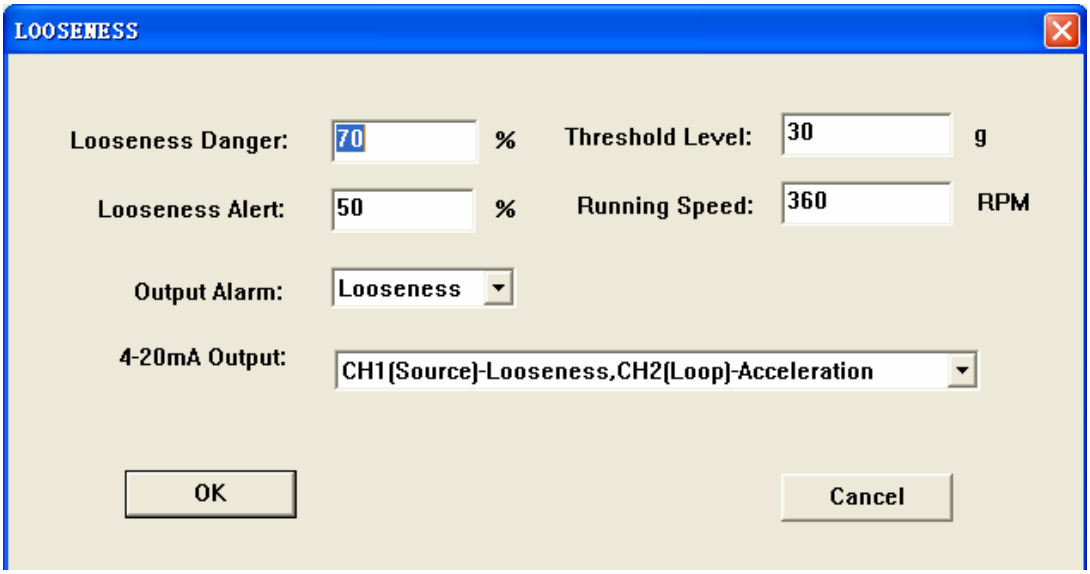
- ***DTM20/DTM20-101 Seismic Velocity Transducer Default Setting***



- ***DTM20/DTM20-A4 Looseness Default Setting***



Click the button named Looseness Setup Additional，the Looseness dialog will popup:



Description of Configuration Parameters

- **Channel Type**

The type of the input and output signals.

- **Transducer Type**

The type of the transducer the current DTM device works with.

- **Transducer Sensitivity**

The value depends on transducer type. It is typically expressed as millivolt per measure unit.

- **Alert Time Delay, Danger Time Delay**

It means how long the module will delay before changing into alarm status after having detected that real-time value exceeds the alarm set-point. Both Alert Time Delay and Danger Time Delay should be set with an integer from 1s to 60s. And you could also check “100ms” option to set Danger Time Delay to 100ms. For DTM10-501 and DTM10-502, the alert time delay and danger time delay are set to “0”.

- **Teeth Per Cycle**

The teeth number on the gear i.e. the integer number of input pulses per shaft revolution. The Events per Revolution may be specified as an integer between 1 and 255. Default is 1. User could set it according to the actual value in the field.

- **Hysteresis Voltage**

It is the voltage level above or below the threshold value which is required to trigger the input signal from the transducer. The larger the hysteresis, the greater the immunity to noise on the input signal. When the input signal passes the threshold voltage plus 1/2 of the Hysteresis voltage, the signal goes high. When the input signal returns to the threshold voltage minus 1/2 of the Hysteresis voltage, the signal goes low. It only works with the DTM speed modules (DTM10-501 and DTM10-502). Default is 1V. User could modify it in the range of 0.5V~2.5V.

- **Trigger Voltage (Gap), Adjust**

The Trigger Value is the nominal voltage that the Hysteresis is centered about. It only works with the DTM speed modules (DTM10-501 and DTM10-502). When Manual Threshold Type is selected, user should manually set this value or directly click **Adjust** button to let the system get it automatically. Before this operation, make sure your computer and the DTM device are connected, and the configuration in module must match the configuration in DTM-CFG software. Moreover, the connected transducer must be placed to proper position; otherwise this obtained value may be wrong.

- **Zero Position (Gap), Adjust**

The transducer voltage corresponding to the nominal DC shaft position. It only works with DTM10-202 and DTM10-302 modules. The default value is -10V. User can manually change the value or directly click **Adjust** button to let the system get it automatically. Before this operation, make sure your computer and the DTM device are connected, and the configuration in DTM device must match the configuration in DTM-CFG software. Moreover, the connected transducer must be placed to proper position; otherwise this obtained value may be wrong.

- **Full Scale High, Full Scale Low**

The high limit and low limit of the full scale. The full scale is the entire span of the data to be displayed.

- **Sample Rate**

It is the factory setting. To change the value, factory password is required. The DTM device couldn't be compatible with different sample rate at the same time.

- **Measurement Unit**

The units of the full scale range and data values.

- **Measurement Type**

Measurement type depends on the type of the channel. DTM devices support four measurement types: PK, PK-PK, RMS, average.

- **Alarm Type**

DTM devices support two types of alarm, Alert and Gap. Alert type means that the module outputs alarm when the real-time value exceeds alarm set-point. Gap type means that the module outputs alarm when the gap voltage is above the Gap high and below the Gap low. Every channel of the module is capable of producing Alarm indication. It doesn't work with "phase reference output" channel of the DTM10-501 and DTM10-502 modules.

- **Alarm Latching**

Alarm latching causes the DTM module to retain an Alarm status after the Alarm condition has gone away. The latching mode allows you to know if an alarm set-point has been exceeded since the last rack reset. Press the **reset** button on the module or short Remote RESET/BYPASS（Short the connector pin RESET and COM）to reset the latched alarm if the current measured value is less than the set-point value. The default status is latched and user can modify it. It doesn't work with "phase reference output" channel of the DTM10-501 and DTM10-502 modules.

- **Alarm Option**

It is the factory setting. To change the setting, factory password is required.

- **Alarm Set Point**

There are two alarm levels for the channel that outputs vibration variable such as shaft vibration, speed, acceleration, velocity and so on. And for the channel that outputs shaft position, there are four alarm levels. By default, danger set point is set to 75% of full scale and alert set point is set to 50% of full scale. When the channel outputs phase reference, the alarm set point doesn't work.

Gap alarm has two levels: Gap high and Gap low.

- **Transducer Direction, Toward Probe, Away From Probe:**

Define the normal direction as movement "toward" the transducer or "away from" the transducer. If the normal movement of the machine rotor is toward the transducer then "Toward Probe" should be selected. Otherwise, select "Away from Probe". It works only when the channel outputs shaft position.

- **Threshold Type, Auto, Manual**

The voltage level of the input signal from the transducer where triggering occurs (if the Hysteresis is 0). It only works with the DTM speed modules (DTM10-501 and DTM10-502). If select Manual, you should set Trigger Voltage.

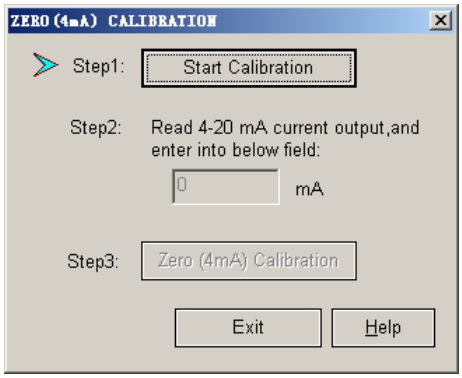
Zero Calibration

Following shows the steps to perform 4mA zero calibration.

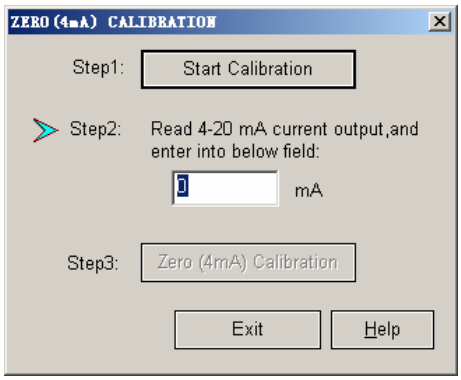
1. Connect DTM device and upper-computer. Ensure the device and DTM-CFG software can normally communicate with each other.
2. Connect the amperemeter and DTM device.

To perform step 1 and step 2, please refer to ***System Wiring Diagram for Configuration*** of this manual.

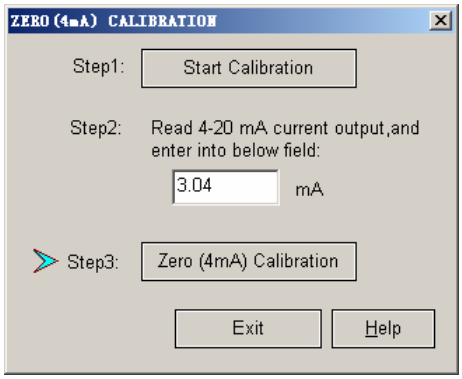
3. Directly click **STEP3A Calibration** button on main window or select **4mA Calibration** command from **Operation** menu. Window below is launched.



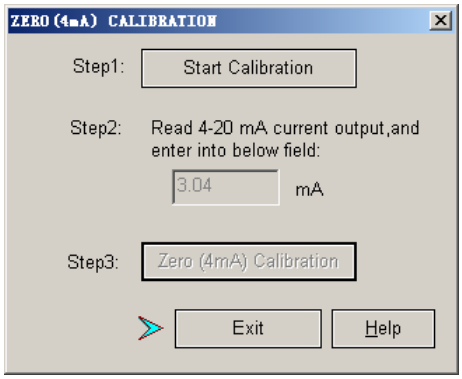
4. Click **Start Calibration** button on the window. To start zero calibration, you should activate configuration password.



5. Read the current value from the amperemeter after it settled down, and then type it to the edit box.



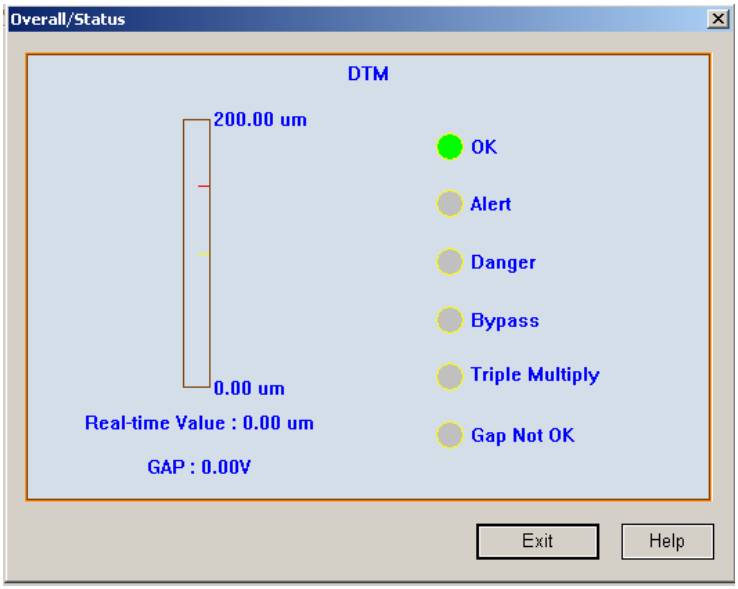
6. Click **Zero (4mA) Calibration** button to download the current value to DTM device.



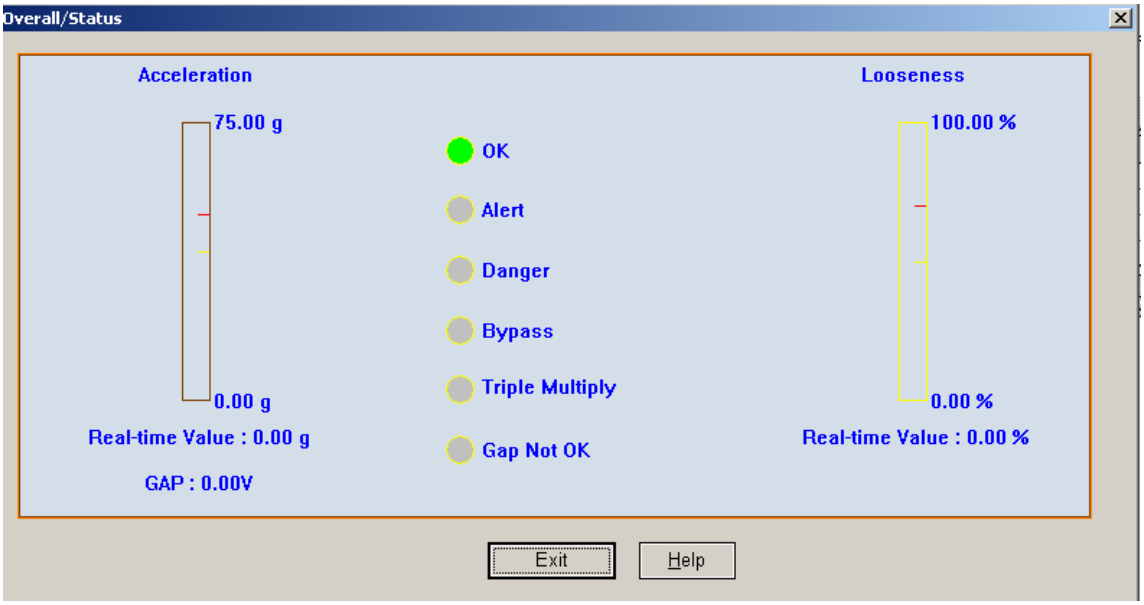
7. Click **Exit** button to exit the calibration status.

Overall and Status

Ensure the DTM-CFG software and DTM device can normally communicate with each other. Directly click **STEP3B Overall and status** button on main window or select **Overall and status** command from **Operation** menu. If the module is not DTM20-A4,window below is launched as follows.



If the module is n DTM20-A4, window below is launched as follows.



The window above shows the channel's real-time value, GAP value and state of the status bits.

Color Indication for bar graph:

- ✓ ***Green:*** The real-time value is in normal range.
- ✓ ***Yellow:*** The real-time value exceeds the alert set-point.
- ✓ ***Red:*** The real-time value exceeds the danger set-point.

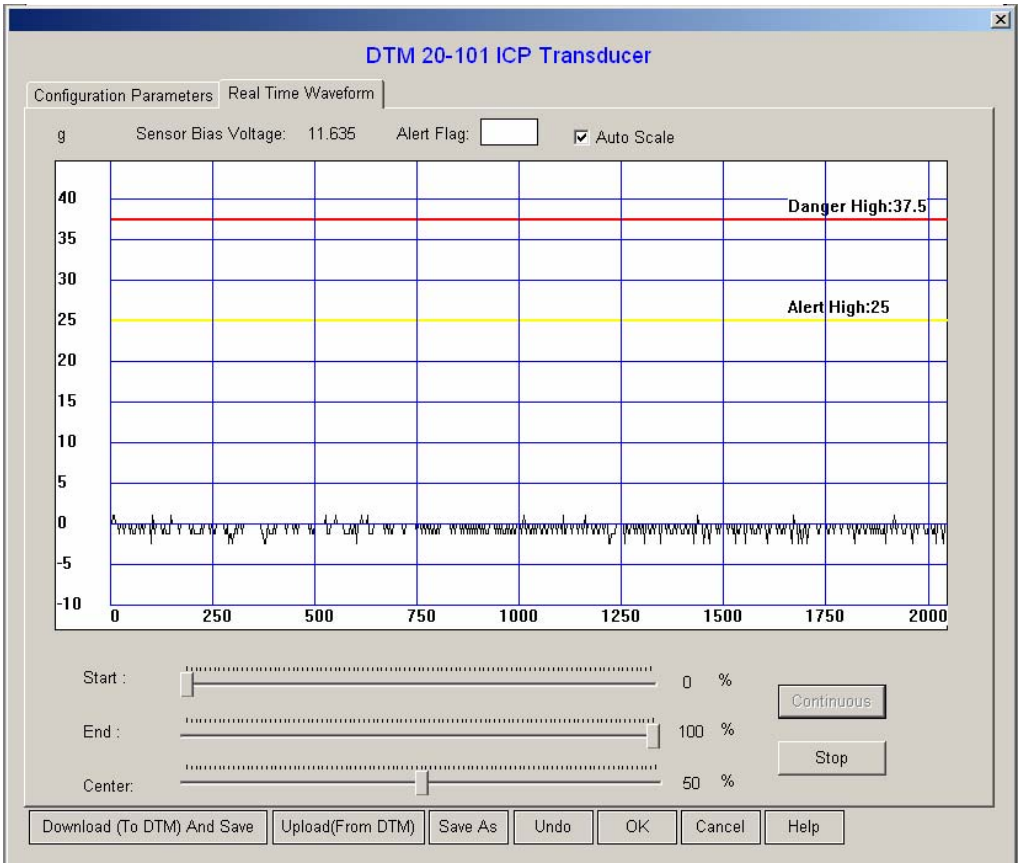
Lights before Alert, Danger, Bypass, Triple Multiply and Gap Not OK indicate the status of the channel and

Gap voltage. When alert occurs, the light before it turns yellow; when danger and Gap Not OK occur, the lights before them turn red. And if the channel is in alarm bypass or triple multiply status, the lights before them turned red.

Light before OK indicates whether the selected channel works normally. Green means that it works normally, and gray means that it is in abnormal status.

Real Time Wave Form

The function is valid if the firmware version is greater than 51. Click the button named 'Real Time Waveform' of the configuration window, the real time wave form window will popup:



Click the button named 'Continuous' to acquire infinite real time wave form.

Click the button named 'Stop' to stop real time wave form acquiring.

Dragging the sliders below to change the scope of the real time wave form.

Standard vs Advanced

Click **Standard vs Advanced** button on main window and figure below is launched. It displays the distinctions between DTM-CFG Standard edition and DTM-CFG Advanced edition.

Function	Standard	Advanced
Get Connected	√	×
Module Definition	√	√
System Setup	√	√
Zero Calibration(4mA)	√	√
Full Scale Calibration(20mA)	×	√
AD Calibration	×	√
Buffer Calibration	×	√
Magnification Calibration	×	√
Linearization Calibration	×	√
Overall And Status	√	√
Diagnosis	√	×
Upload	√	√
Download	√	√
Open File	×	√
Save File	√	√
Module ID Setup	×	√
Communication Setup	×	√
Modbus Range Setup	×	√
Module Control	×	√
Relay Control	×	√
Factory Information	×	√
Overall Record	×	√
Channel Status Record	×	√
Help	√	√

√:Has the function.
×:Has not the function.

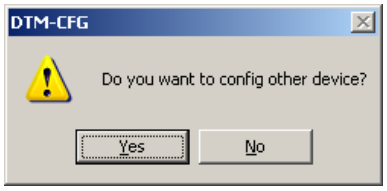
Exit

System Units Setting

Set Units for DTM device. Upload and Download functions about different units are all supported.

Exit

Click **Exit** button on main window to exit the software.



Yes (Button): Continue to configure other DTM devices.

No (Button): Directly exit the software.

Switch to Advanced Edition

If you want to use the Advanced edition to configure DTM device, please select **Advanced** command from **Operation** menu.

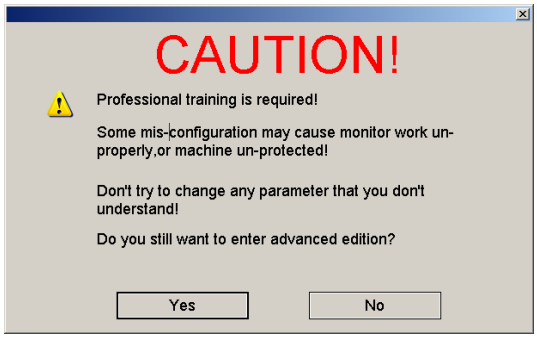
NOTE: User without taking a professional training is not recommended to use the Advanced edition of DTM-CFG software.

DTM-CFG Advanced Edition Operation

Start DTM-CFG Advanced

CAUTION: The operation by non-professional operator in this section may damage your DTM device.

On main window of the Standard edition, select **Advanced** command from **Operation** menu, and then the "CAUTION" window will be launched. See picture below:



Ensure you have carefully read the contents mentioned on this window. Then click **Yes** button on the window to enter into DTM-CFG Advanced edition.

Buttons on Main Window

Open

Click this button to open a configuration file. The extended name of the file is *.cfg. This command has the same function with **Open** command from **File** menu.

Save

Click this button to save the current system configuration information to the file. The extended name of the file is *.cfg. This command has the same function with **Save** command from **File** menu.

Upload (From DTM)

Click this button to upload the configuration information from DTM device to DTM-CFG. This command has the same function with the **Upload (From DTM)** command from **Communication** menu on main window.

Download (To DTM)

Click this button to download the configuration information from DTM-CFG to DTM device. This command has the same function with the **Download (To DTM)** command from **Communication** menu on main window.
To download the configuration information to DTM device, ensure the configuration password was activated; otherwise you will be asked to type the configuration password.

System Units Setting

Set units for the system: Metric or English Unit.

DTM Modules Configuration

Module Type Selection

Before configure the parameters, you should set the type of DTM device. Left click DTM picture on the main window and select the right type of the connected DTM from the drop-down menu.

For instance, the type of your DTM is DTM10-201, then you should select “DTM10-201 Module” and finally click **Yes** button on the launched message box.

Special note:

Generally speaking, when DTM leaves factory, most parameters (especially for the type of DTM device) were configured according to the customer’s requirements. Customer only needs to change some of parameters by the field’s requirements. So, customers are not recommended to re-set the type of DTM device except in special condition. Following is the additional description for the re-setting of DTM device type. The device type conversion can be done only among the same type class. Table below shows the detailed classification of DTM.

DTM	DTM10 Series	Requires an external driver	DTM10-201
			DTM10-202
			DTM10-501
		Doesn't require an external driver	DTM10-301
			DTM10-302
			DTM10-502
	DTM20 Series	DTM20-101 ICP Transducer	
		DTM20-101 Seismic Velocity Transducer	

Thus, the operation of changing a DTM10-301 device to a DTM10-201 device is forbidden, but a type conversion from DTM10-301 to DTM10-302 is allowed.

DTM Parameters Configuration

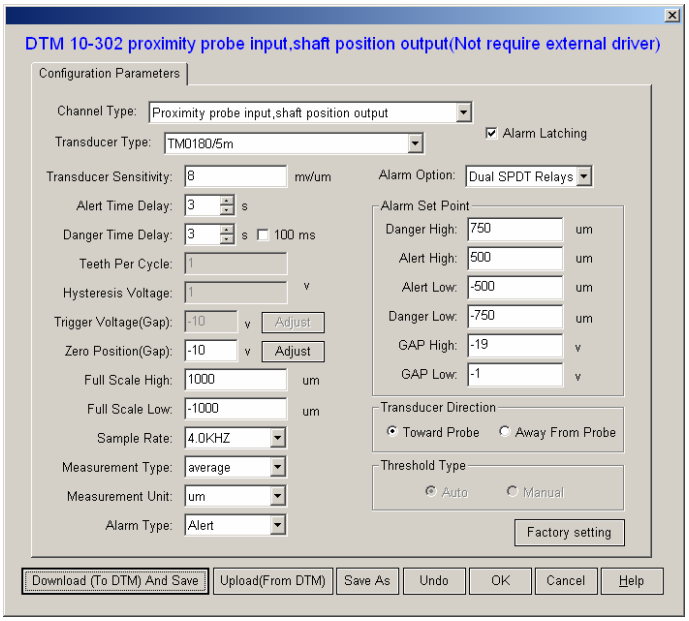
Two methods to open the DTM configuration window:

Method 1: Right click the DTM picture on main window.

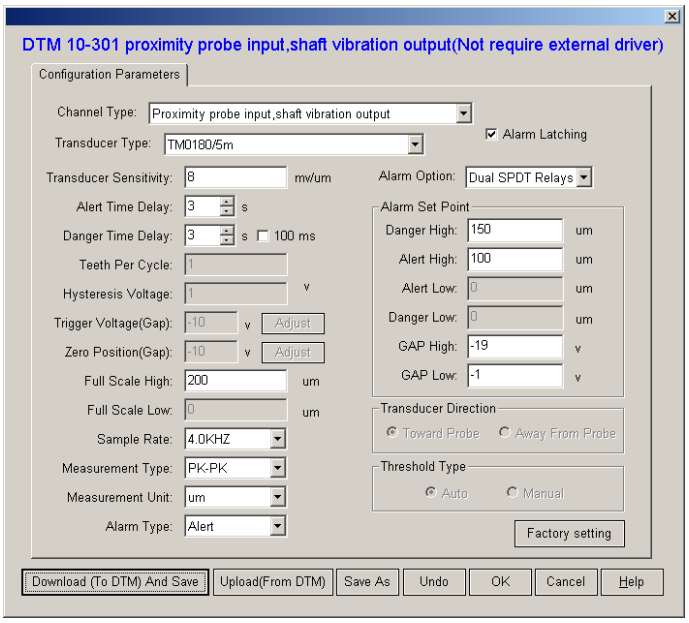
Method 2: Select **Module Definition** command from **Module-Configuration** menu.

Pictures below show the default settings for different types of DTM device. Since we have detailedly explained the configuration parameters in the standard edition, here we don't repeat it.

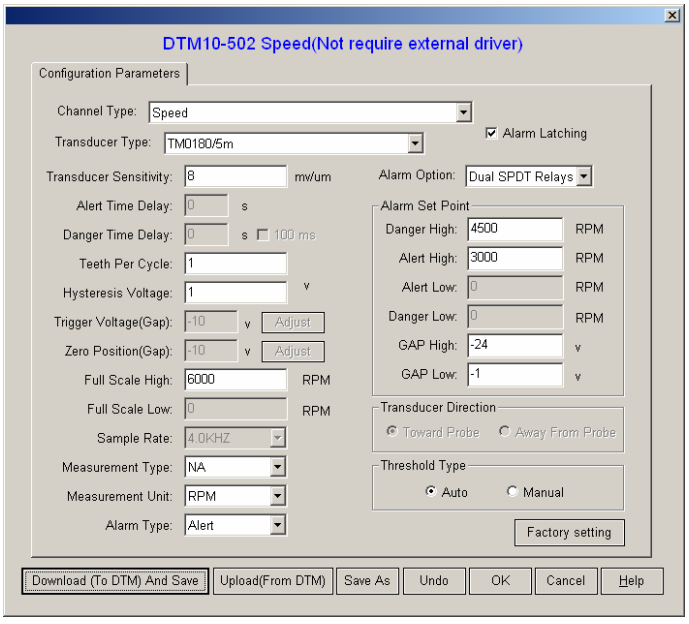
- ***DTM10-C0/DTM10-302 Configuration***



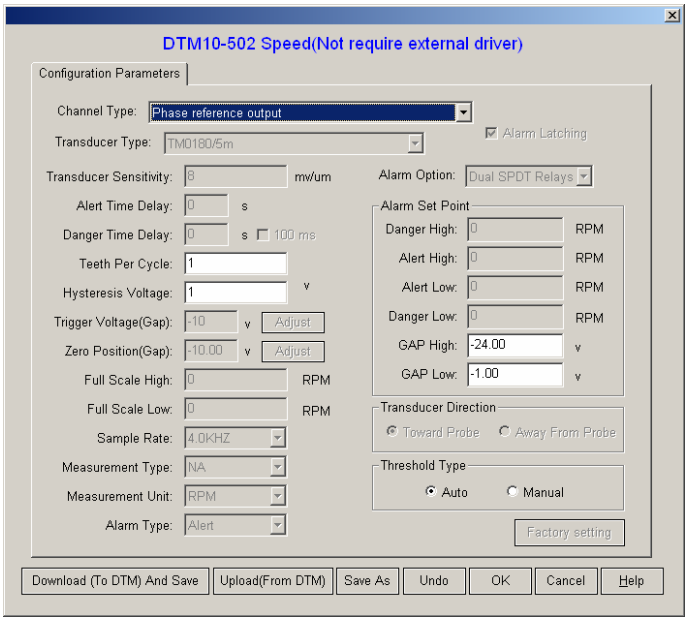
- ***DTM10-C0/DTM10-301 Configuration***



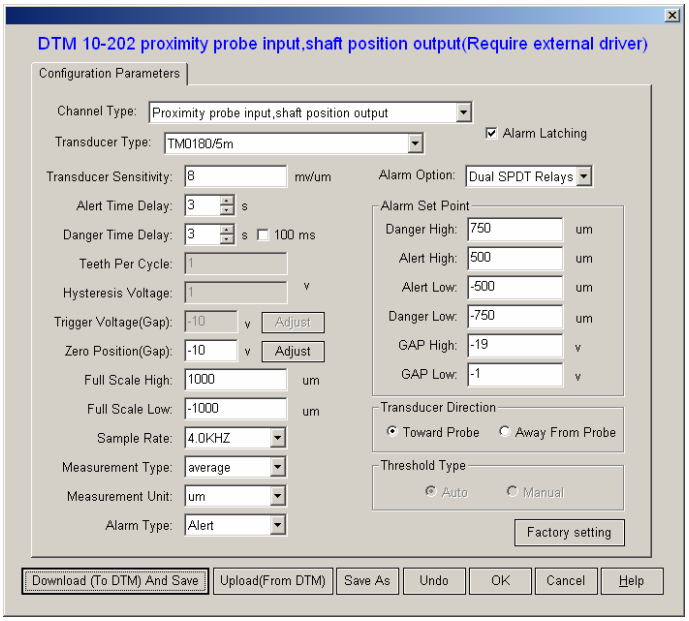
- ***DTM10-C0/DTM10-502 Configuration（channel type is "Speed"）***



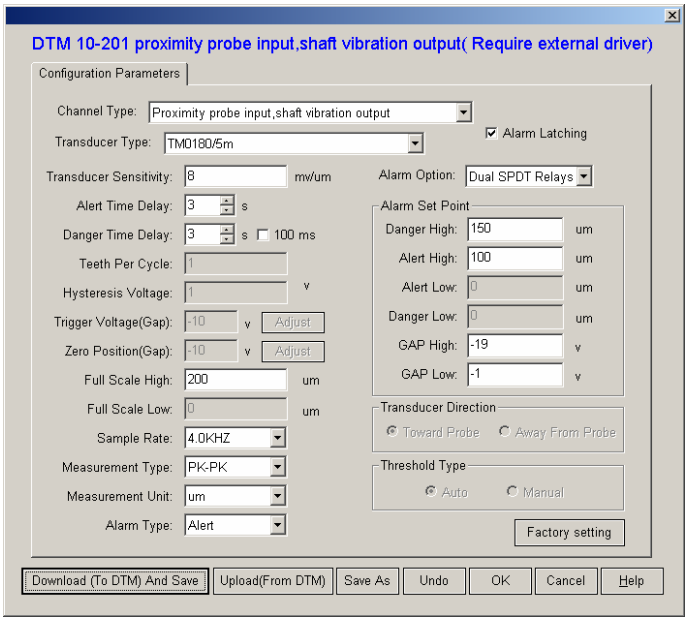
- ***DTM10-C0/DTM10-502 Configuration（channel type is "Phase Reference Output"）***



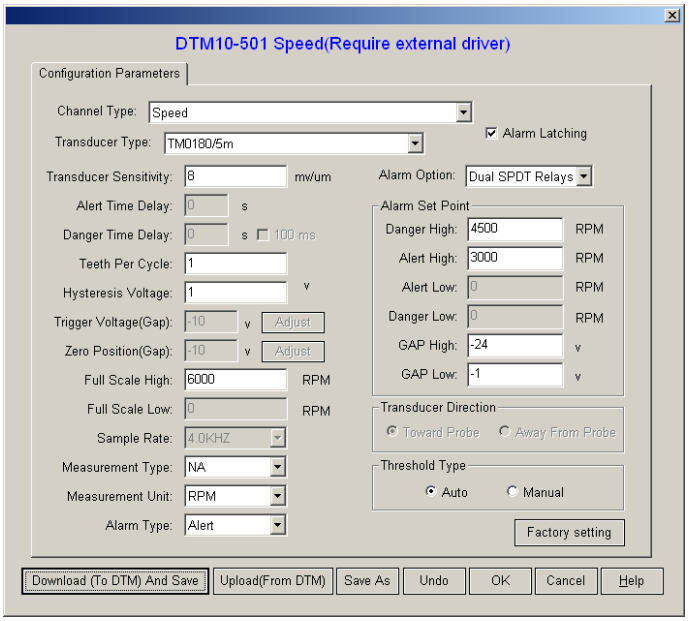
- ***DTM10-C1/DTM10-202Configuration***



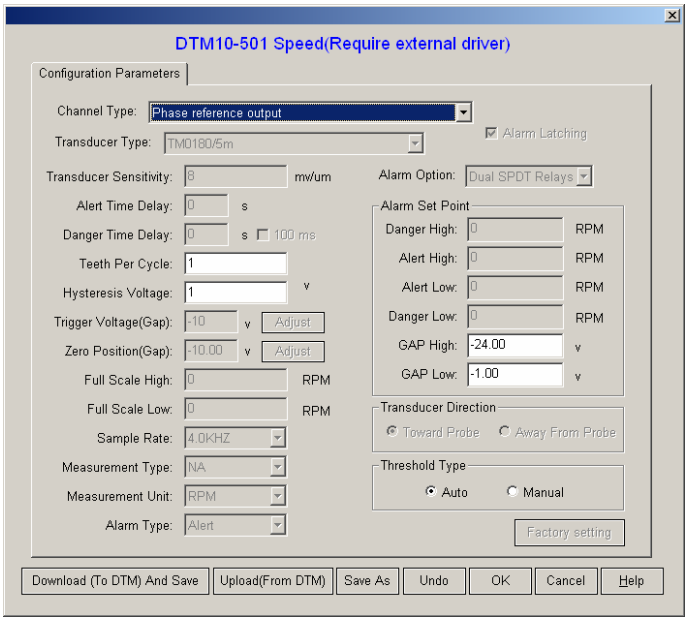
- ***DTM10-C1/DTM10-201 Configuration***



- ***DTM10-C1/DTM10-501 Configuration（channel type is "Speed"）***

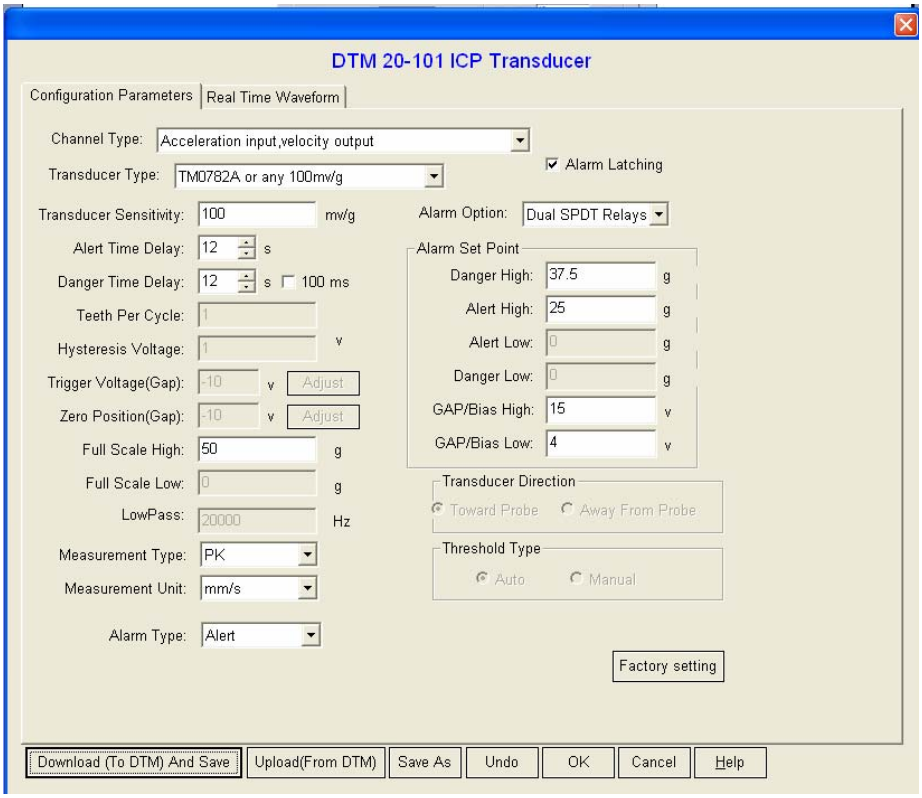


- ***DTM10-C1/DTM10-501 Default Setting（channel type is "Phase Reference Output"）***

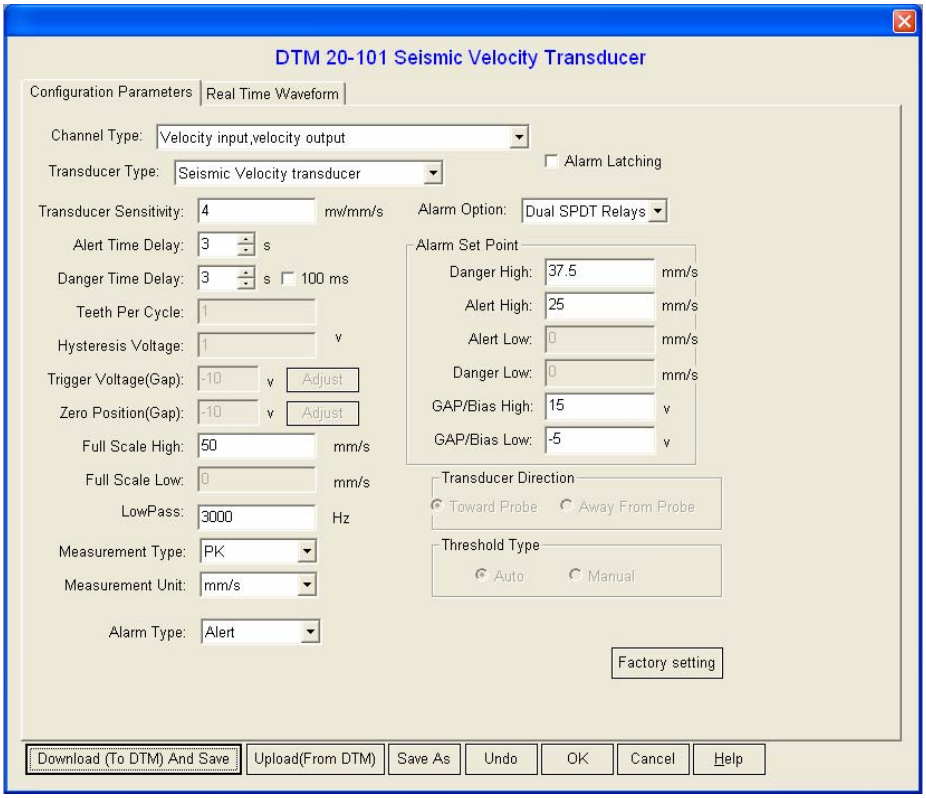


CAUTION: Be more careful to configure DTM20 modules. The device may not work with wrong configuration.

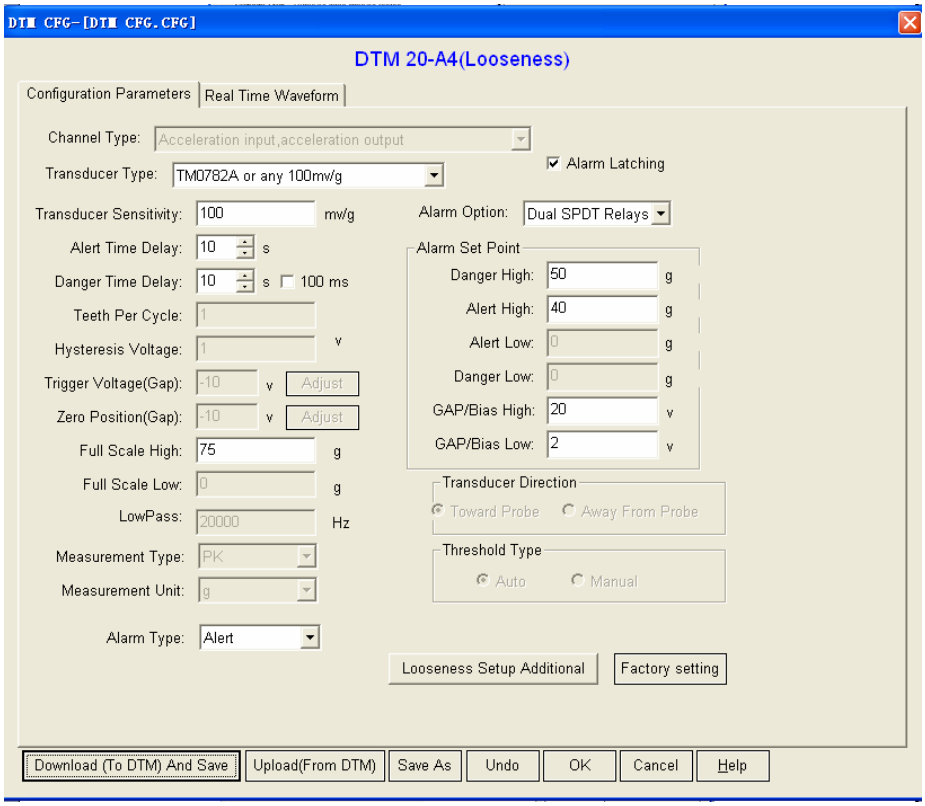
- ***DTM20/DTM20-101 ICP Transducer Configuration***



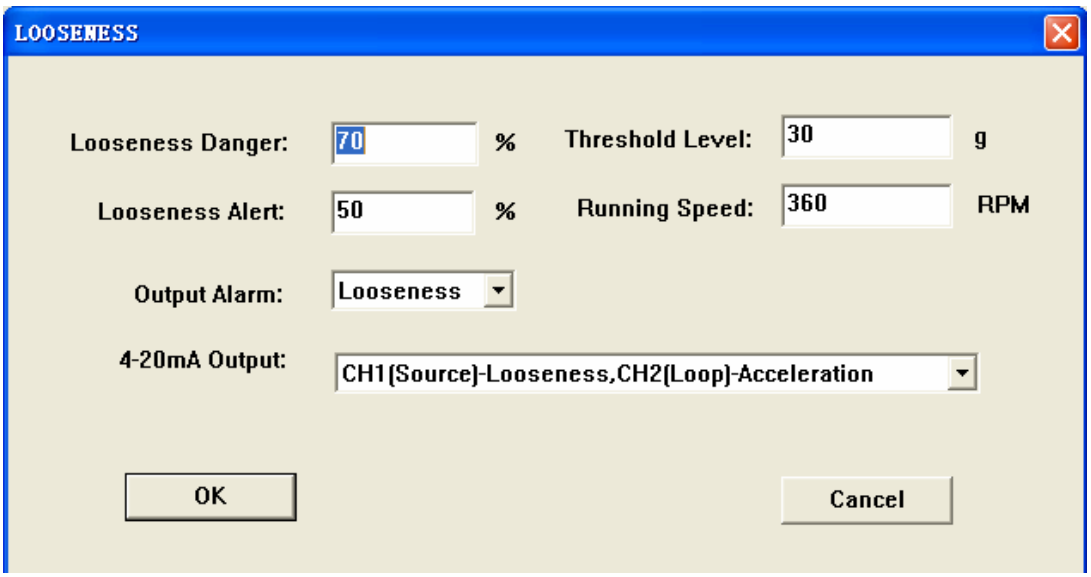
- ***DTM20/DTM20-101 Seismic Velocity Transducer Default Setting***



- ***DTM20/DTM20-A4 Looseness Default Setting***



Click the button named Looseness Setup Additional，the Looseness dialog will popup:



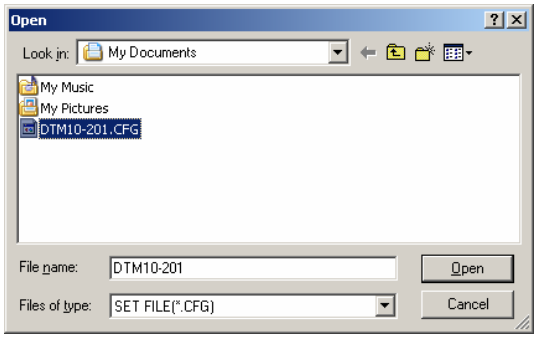
After you finished the parameter settings, you should click **Download (To DTM) And Save** button to download the configuration information to the DTM device (configuration password is required). You are strongly recommended to save the configuration information to a file for further reference. To perform this, click **Save As** button.

Menus Navigation

File Menu

Open

Use this command to open a configuration file. The extended name of the file is *.cfg. Select the configuration file and click **Open** button.

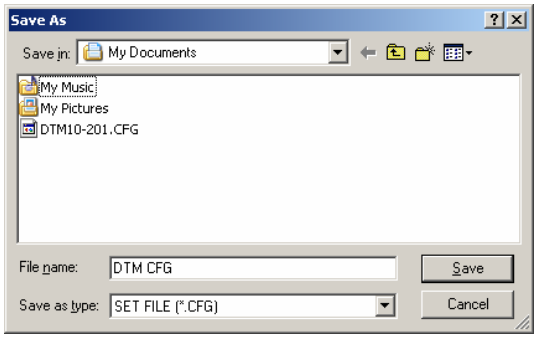


This command has the same function with **Open** button  on main window.

Save

Use this command to save the current system configuration information to the file. The extended name of the file is *.cfg. This command has the same function with the **Save** button  on main window.

1. First time to save the file, “Save As” window will be launched. You should select the file path and type the file name in edit box, and finally click **Save** button.



After the file was saved, the title bar of main window will change. Picture below shows the title before the file is saved.

If the file was saved as “DTM10-201.CFG”, the title will be changed to picture below.

2. If the configuration file has existed, clicking this command will not launch any window. But the main window title may change when configuration parameters changed. If the configuration parameters didn’t

change before you click **Save** command, the title bar will show DTM-CFG directly plus [DTM10-201.CFG]. See picture below:

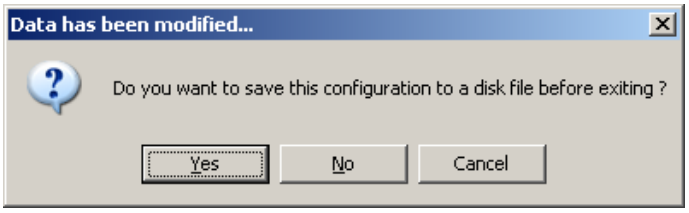
If the configuration parameters has changed before you click **Save** command, the title bar will show DTM CFG plus – and plus [DTM10-201.CFG]. See picture below:

Save As

Use this command to save the configuration information to another file.

Exit

Use this command to exit DTM-CFG software. Before you select this command, if the system configuration information changed, following window will be launched.



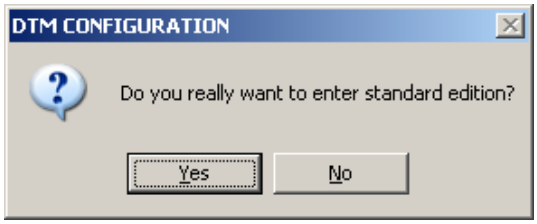
Yes (Button): Click this button to exit DTM-CFG software with the system configuration information being saved to the file.

No (Button): Click this button to directly exit DTM-CFG without saving any information.

Cancel (Button): Click this button to withdraw the operation.

Standard

Use this command to switch to DTM-CFG Standard edition. Click **Yes** button on window below and then enter into the Standard edition.



Communication Menu

Upload (From DTM)

Use this command to upload the configuration information from DTM device to DTM-CFG. This command has the same function with the **Upload (From DTM)** button 

on main window.

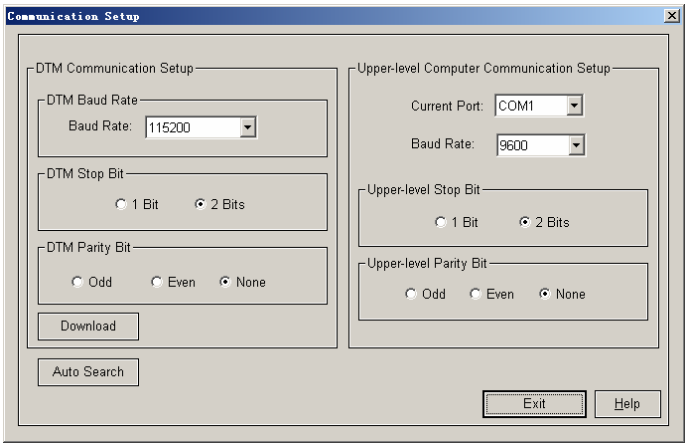
Download (To DTM)

Use this command to download the configuration information from DTM-CFG to DTM device. This command has the same function with the **Download (To DTM)** button 

on main window. To download the configuration information to DTM device, configuration password should be activated.

Communication Setup

Select **Communication Setup** from **Communication** menu and you will see the window below.



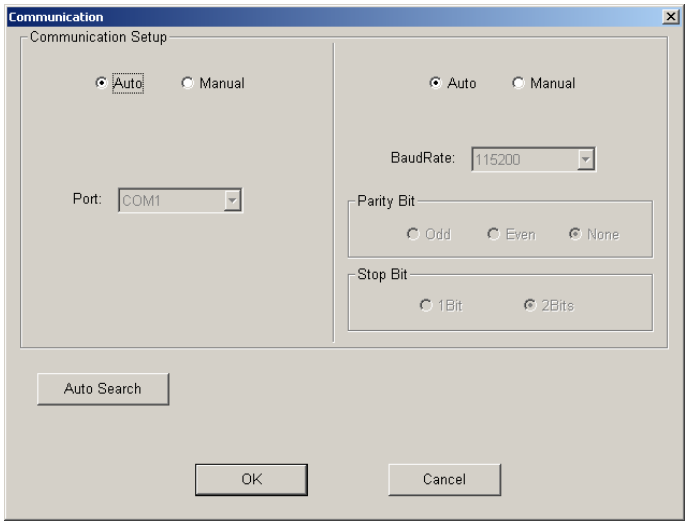
The “Communication Setup” window has two functions: One is to connect the DTM device and DTM-CFG; another is to set the communication parameters of the DTM device.

- **Connect DTM device and DTM-CFG**

Ensure the following first:

1. Correctly wire the system.
2. DTM-CFG only connects to one DTM.
3. The DTM ID is correctly set (Default is 63).
4. The related USB-RS converter driver is installed.

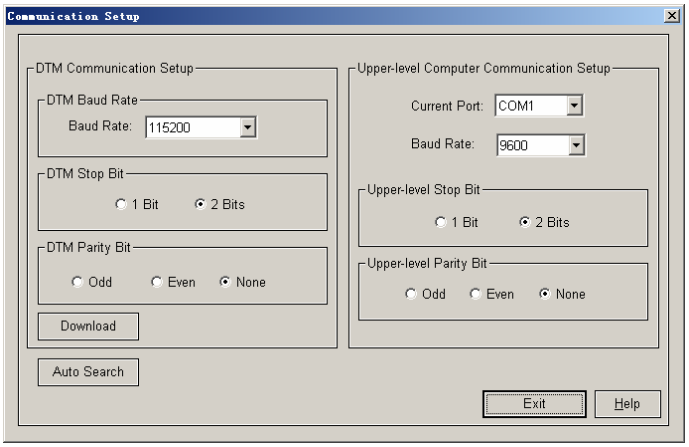
After check the four considerations listed above, click **Auto Search** button and following window is launched.



User could select “Auto” option to let the software automatically scan the communication parameters or select “Manual” option to set the parameters by manual. Obviously automatic parameters scanning will take more time. If you have known some parameters, “Manual” option is recommended. After set the parameters, click **Auto Search** button and then software will connect the DTM device.

- **Set the communication parameters of DTM device.**

Before set the communication parameters, ensure DTM device and DTM-CFG can well communicate with each other. Select the communication parameters (baud rate, stop bit and parity bit) on the left side of “Communication Setup” window. And then click **Download** button (configuration password is required). If the download operation succeeds, the communication parameters on the right side of “Communication Setup” window will be refreshed.

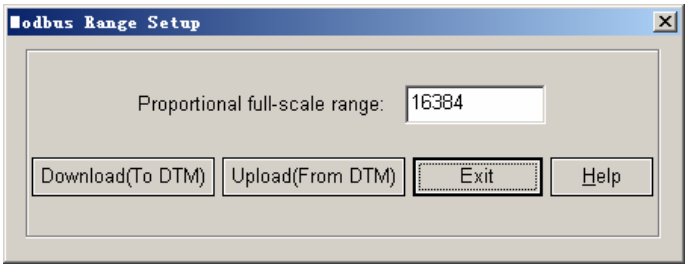


NOTE: For DTM meter used for condition monitoring system, we strongly recommend that user set the Baud Rate to 38400Bps or 115200Bps!

Module-Configuration Menu

Modbus Range Setup

Click this command to launch “Modbus Range Setup” window.

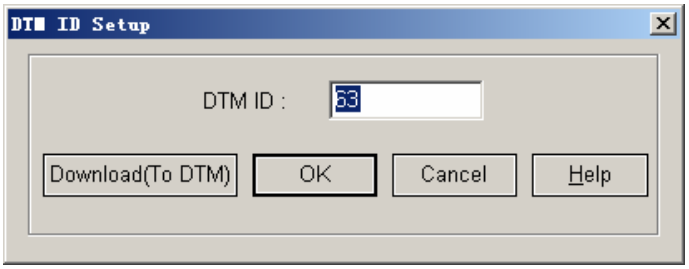


Proportional full-scale range: It is also called Modbus full scale range. Hardware converts the analog signal into a digital format. The Modbus full scale range is related to the full scale range. For example, if the Modbus full scale range is 16384 and full scale range is 25 mm/s, and then the current vibration measured value is 12.5 mm/s while the Modbus value is 8192. The Modbus full scale range could be set with an integer from 128 to 16384, and the default is 16384.

Type the value in the edit box and then click **Download (To DTM)** button to download it to DTM device. You can also click **Upload (From DTM)** button to upload the value from DTM device.

Module ID Setup

Click this command to launch “DTM ID Setup” window.



DTM ID: It is also called DTM slave address. The slave address allows multiple DTM devices to share the same computer. These DTM devices would be connected to the same COM port but would be distinguished by their individual slave address. Slave Address is always set on the related device configuration software. The ID range could be set with an integer from 1 to 255, and the default is 63.

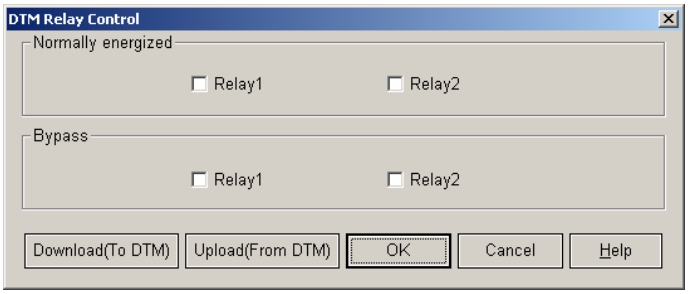
NOTE: To change slave address of a DTM device, you must disconnect other DTM devices from the same COM port.

Module Definition

Clicking this command will launch the configuration window of the current DTM device. As an alternative operation, you can directly right click the DTM picture on the main window.

Relay Control

Click this command to launch “DTM Relay Control” window.

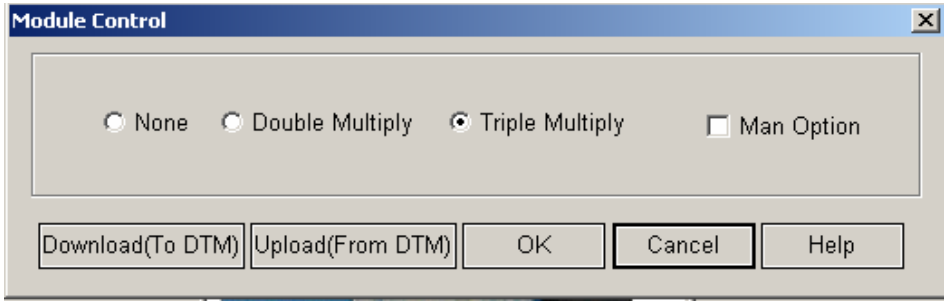


Normally energized: The default is de-energized.

Bypass: The bypass function could inhibit the alarm in DTM. The default is no bypass.

Module Control

The function is used to set the module alarm multiply property. Click this command to launch “Module Control” window.



To apply this function, you should first short Triple/Multi and COM, and then set None, Double Multiply or Trip le Multiply in DTM-CFG (default is Triple Multiply). After that, system alarm level will increase a factor of 1, 2 or 3.

Man Option: This function is used to adjust the current output of the module for special purpose. If checked, the software will automatically double the full scale range you set on the module definition window. For example, the full scale range is set to 200 um, and the measured value is 100 um. If “Man Option” is not checked, the 4~20mA current output of this module is $\frac{100}{200}\times(20-4)+4=12\text{mA}$; if it is checked, the current output is $\frac{100}{200\times 2}\times(20-4)+4=8\text{mA}$. **Note** that this function won’t change the real measured value and full scale range displayed on “Overall/Status” window. It only takes effect on the current output of the module.

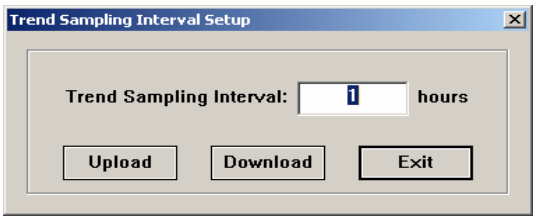
NOTES:

1. The alarm multiply function is only available for DTM10-201, DTM10-301, and DTM20-101.
2. Man Option function is effective when the firmware version of the module matches following:
   - For DTM10-201 and DTM10-301: Firmware version of the module is not less than 53; or the firmware version is greater than or equal to 30 and less than 50.

- For DTM20-101 ICP and DTM20-101 Seismic: Firmware version of the module is not less than 51; or the firmware version is greater than or equal to 27 and less than 50.

Trend Sampling Interval Setup

Click this command to launch “Trend Sampling Interval Setup” window.



Trend Sampling Interval: Set a time interval of storing data for the DTM which is used for condition monitoring system such as PCM626 System. For example, if you set the interval as two hours, DTM will store sample information every two hours. It could store maximum 1024 samples. The information includes collecting time, measured value and channel status. After the DTM transfers these historical trend data to PCM626 System, the stored data will be cleaned up.

The default value is set to “10 hours” when device leaves factory. You are allowed to set it to an integer within range from 1 to 240.

NOTE: Only DTM that is used for condition monitoring system supports this function.

Calibration Menu

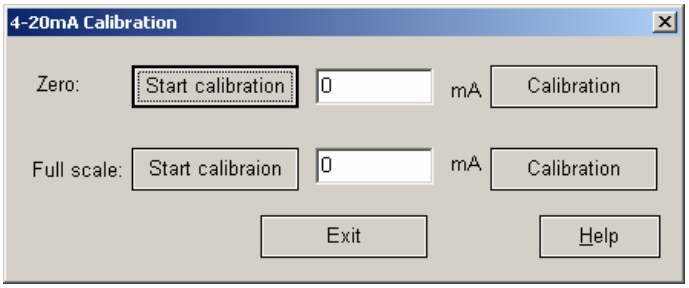
4-20mA Calibration For User

The 4-20mA Calibration process is below:

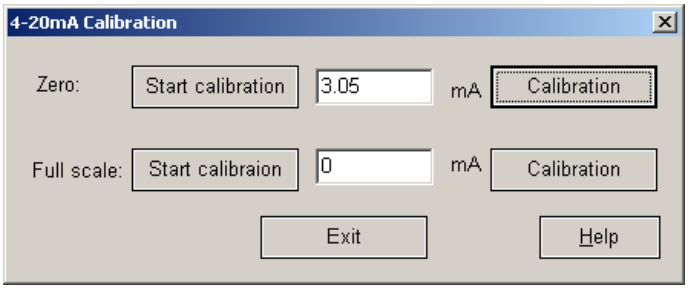
1. Connect DTM device and upper-computer. Ensure the device and DTM-CFG software can normally communicate with each other.
2. Connect the amperemeter and DTM device.

To perform step1 and step2, please refer to ***System Wiring Diagram for Configuration*** of this manual. Step3-step4 covers the process to complete 4-20mA Zero Calibration.

3. Select **4-20mA Calibration For User** command from **Calibration** menu to open the window. See picture below. Then click **Start calibration** button in “Zero” field.

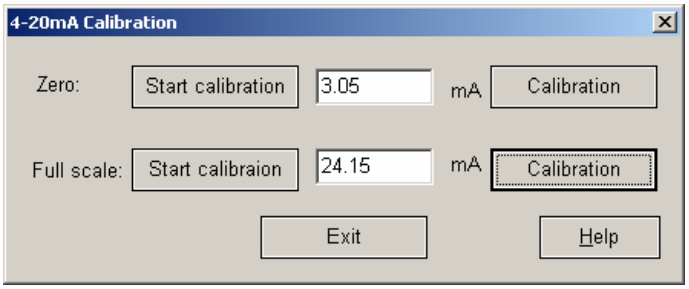


4. Read the current value from the amperemeter after it settled down, and then type it to the edit box. Later click **Calibration** button.



Step5-step6 covers the process to complete 4-20mA Full scale Calibration.

5. Click **Start calibration** button in “Full scale” field. Then read the current value from the amperemeter after it settled down and type it into the related edit box.



6. Later click **Calibration** button.
7. Click **Exit** button to complete the calibration.

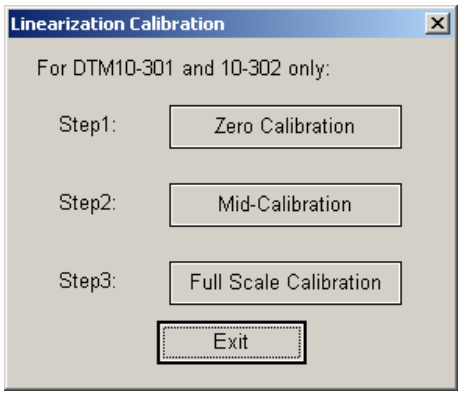
Linearization Calibration For User

Linearization Calibration is only available for DTM10-301 and DTM10-302. Ensure the following:

1. DTM device and DTM-CFG can normally communicate with each other.
2. **Configuration parameter settings:** While the transducer sensitivity is 8mv/um, the full scale range should be set from -1000um to 1000um; while the transducer sensitivity is 4mv/um, the full scale range should be set from -2000um to 2000um.

The Linearization Calibration process is below:

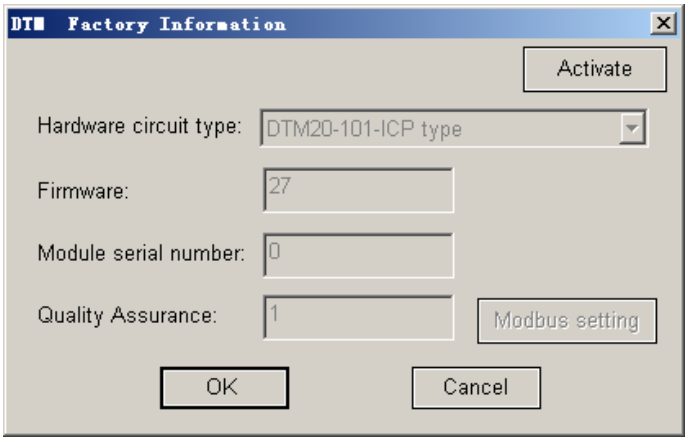
1. Connect the transducer and the DTM device. Please refer to ***System Wiring Diagram for Configuration*** of this manual.
2. Place the transducer on Static Calibrator.
3. Select **Linearization Calibration For User** command from **Calibration** menu to open the window.



4. Adjust the Static Calibrator and set the value to 0.25mm. Then click **Zero Calibration** button.
5. Adjust the Static Calibrator again and change the value. If the transducer sensitivity is 8mv/um, set the value to 1.25mm; if the transducer sensitivity is 4mv/um, set the value to 2.25mm. After that, click **Mid-Calibration** button.
6. Re-adjust the Static Calibrator. If the transducer sensitivity is 8mv/um, set the value to 2.25mm; if the transducer sensitivity is 4mv/um, set the value to 4.25mm. After that, click **Full Scale Calibration** button.
7. Click **Exit** button to complete the calibration.

Factory Information

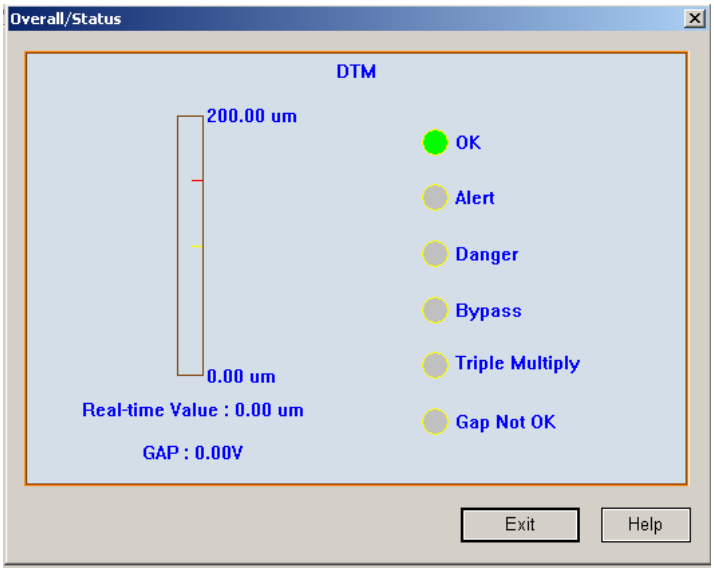
Select **Factory Information** command from **Calibration** menu and “DTM Factory Information” window is launched. In normal condition, customer is only allowed to view the factory information (Hardware circuit type, Firmware version, Module serial number, and Quality Assurance). To change the factory information, click **Activate** button and then factory password is required.


DTM Factory Information
Activate
Hardware circuit type:
DTM20-101-ICP type
Firmware:
27
Module serial number:
0
Quality Assurance:
1
Modbus setting
OK
Cancel

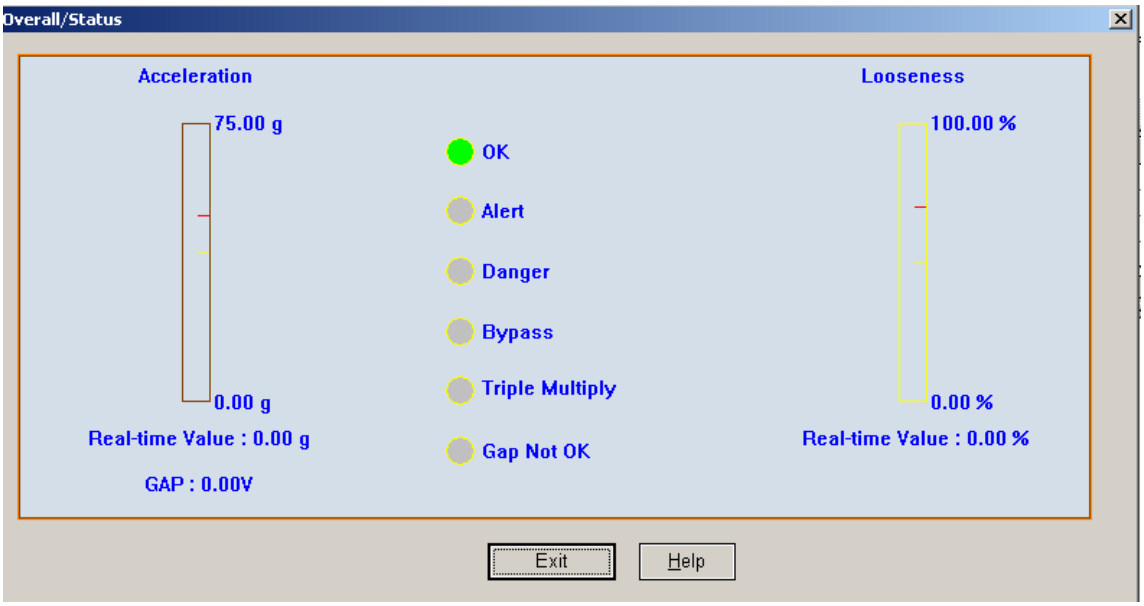
Overall/Status Menu

Real-time Overall And Status

Click this command to launch “Overall/Status” window. The window shows real-time Overall, GAP, and state of the status bits. This is an assistance tool for field engineer to see the working status of the monitor. The window is intended for monitor diagnostics only. If the module is not DTM20-A4, the window below is launched.



If the module is n DTM20-A4, the window below is launched as follows.



The window above shows the channel’s real-time value, GAP value and state of the status bits.

Color Indication for bar graph:

✓ ***Green:*** The real-time value is in normal range.

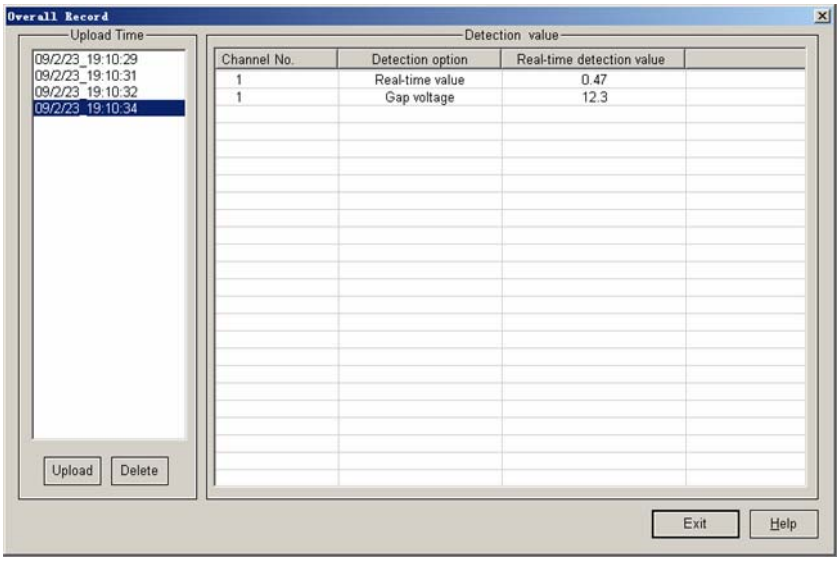
- ✓ ***Yellow:*** The real-time value exceeds the alert set-point.
- ✓ ***Red:*** The real-time value exceeds the danger set-point.

Lights before Alert, Danger, Bypass, Triple Multiply and Gap Not OK indicate the status of the channel and Gap voltage. When alert occurs, the light before it turns yellow; when danger and Gap Not OK occur, the lights before them turn red. And if the channel is in alarm bypass or triple multiply status, the lights before them turned red.

Light before OK indicates whether the selected channel works normally. Green means that it works normally, and gray means that it is in abnormal status.

Overall Record

Select **Overall Record** command from **Overall/Status** menu, then click **Upload** button. A record of overall and gap with time stamp will be stored for further diagnostics.

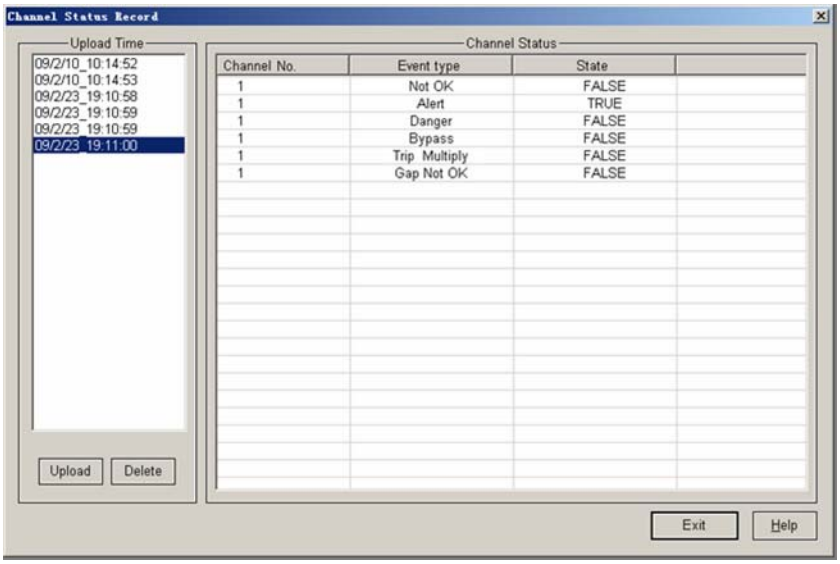


Detection value: Select a time stamp on the "Upload Time" list, the overall and Gap voltage that was uploaded at the time stamp is displayed.

Delete (Button): Select a time stamp on the "Upload Time" list and then click **Delete** button. The record uploaded at the time stamp will be removed.

Channel Status Record

Select **Channel Status Record** command from **Overall/Status** menu, then click **Upload** button. A record of channel status with time stamp will be stored for further diagnostics.

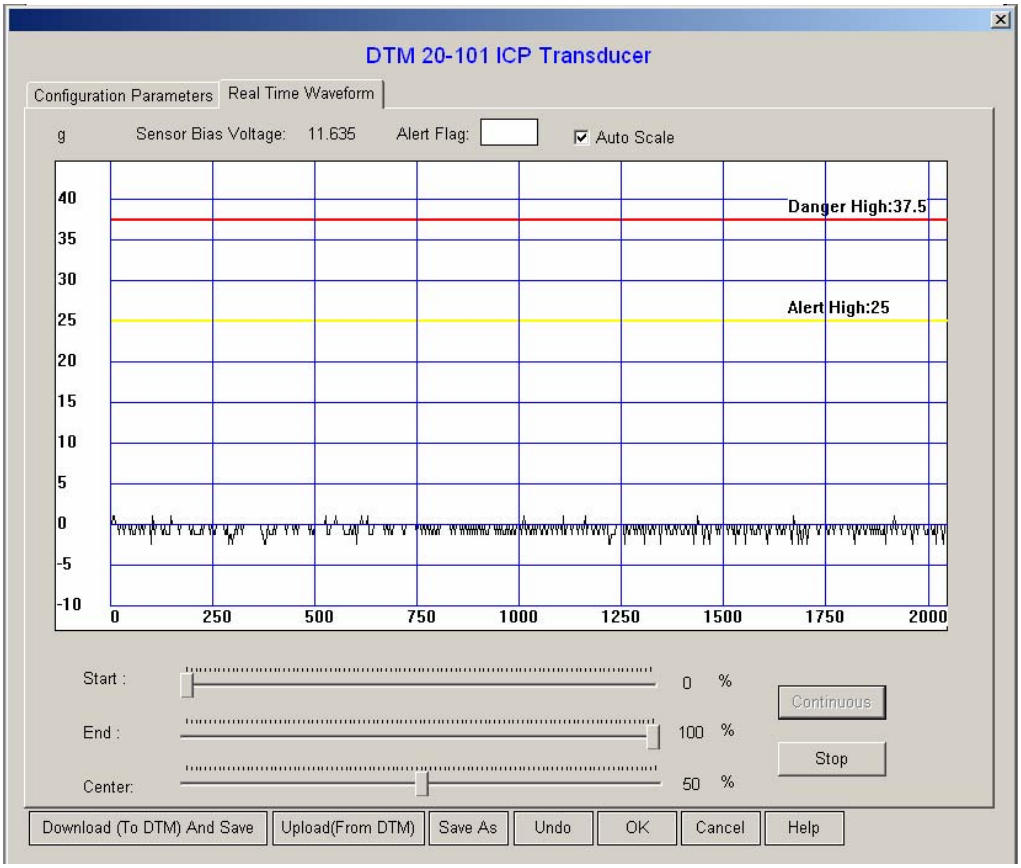


Channel Status: Select a time stamp on the “Upload Time” list, the state of each status bit that was uploaded at the time stamp is displayed.

Delete (Button): Select a time stamp on the “Upload Time” list and then click **Delete** button. The record uploaded at the time stamp will be removed.

Real Time Wave Form

The function is valid if the firmware version is greater than 51. Click the button named ‘Real Time Waveform’ of the configuration window, the real time wave form window will popup:



Click the button named ‘Continuous’ to acquire infinite real time wave form.

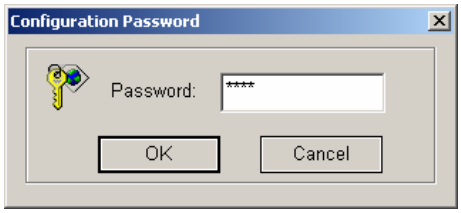
Click the button named ‘Stop’ to stop real time wave form acquiring.

Dragging the sliders below to change the scope of the real time wave form.

Security Menu

Activate Configuration Setting

Click this command to launch “Configuration Password” window. Type the configuration password in edit box and click **OK** button. Default Configuration Password is “1234”, and user can change this default by selecting **Modify Configuration Password** from **Security** menu.

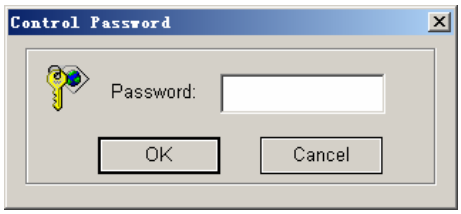


NOTE:

Configuration password has the higher user access than control password. In a DTM-CFG’s running time, if you activates configuration password, you needn’t activate control password.

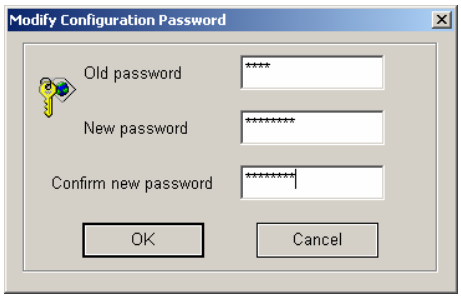
Activate Control Setting

Click this command to launch “Control Password” window. Type the control password in edit box and click **OK** button. The default control password is a blank “”, and user can change this default by selecting **Modify Control Password** from **Security** menu.



Modify Configuration Password

Use this command to modify system configuration password. Type the old configuration password, new configuration password in the related edit boxes. You have to type your new configuration password twice. Default Configuration Password is “1234”.



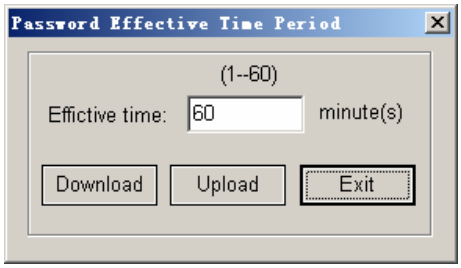
Modify Control Password

Use the command to modify system control password. Type the old control password, new control password in the related edit boxes. You have to type your new control password twice. The default control password is a blank “”.

Password Effective Time Period

Use this command to launch “Password Effective Time Period” window. You can set the effective time of passwords.

Calculated from the time, at which the last successful communication between DTM device and DTM-CFG was performed (the downloading operation was successfully performed), once the time interval exceeds the effective time period, the password is invalid and you have to re-activate the password.



The effective time should be set with an integer from 1 to 60. The default is 10 minute. If you want to download the time to DTM device, the configuration password should be activated.

System Maintenance

System Calibration

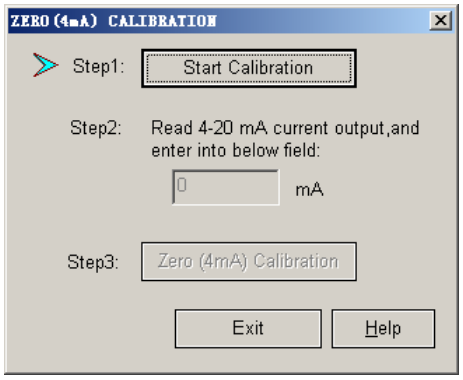
Zero calibration

Following shows the steps to perform 4mA zero calibration.

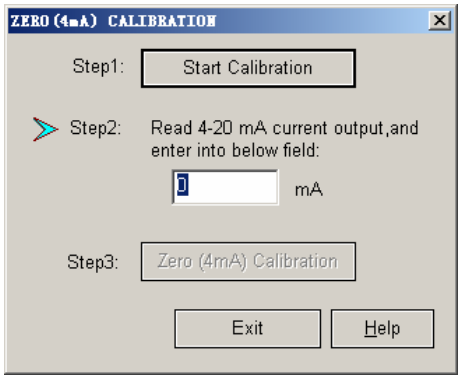
1. Connect DTM device and upper-computer. Ensure the device and DTM-CFG software can normally communicate with each other.
2. Connect the amperemeter and DTM device.

To perform step 1 and step 2, please refer to ***System Wiring Diagram for Configuration*** of this manual.

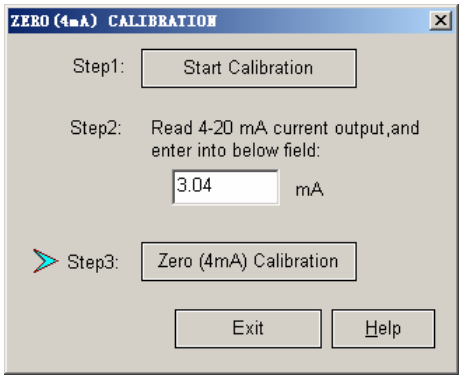
3. Run DTM-CFG software. On main window of standard edition, directly click **STEP3A Calibration** button on main window or select **4mA Calibration** command from **Operation** menu. Window below is launched.



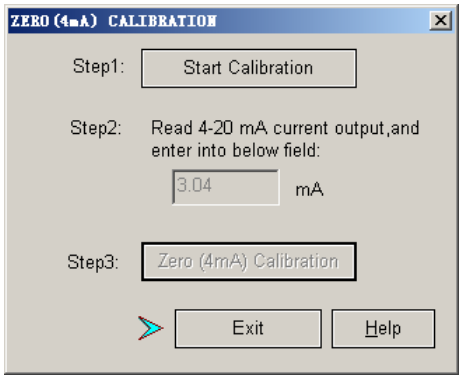
4. Click **Start Calibration** button on the window. To start zero calibration, you should activate configuration password.



5. Read the current value from the amperemeter after it settled down, and then type it to the edit box.



6. Click **Zero (4mA) Calibration** button to download the current value to DTM device.



7. Click **Exit** button to exit the calibration status.

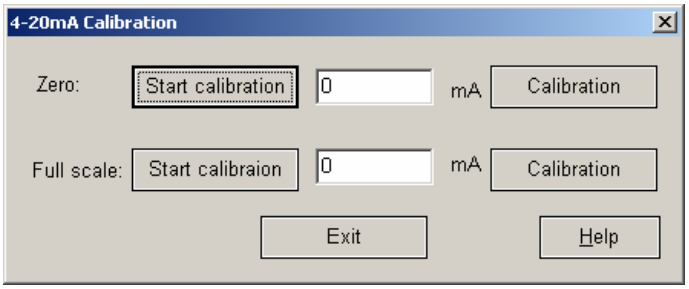
4-20mA Calibration For User

The 4-20mA Calibration process is below:

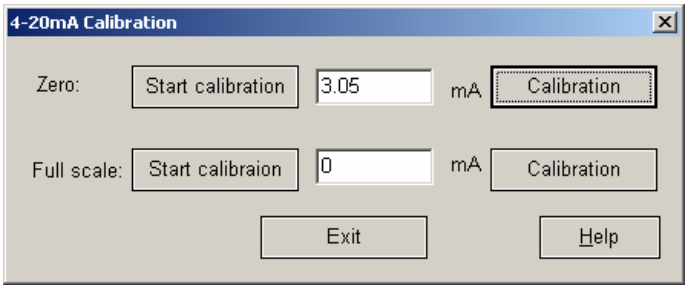
1. Connect DTM device and upper-computer. Ensure the device and DTM-CFG software can normally communicate with each other.
2. Connect the amperemeter and DTM device.

To perform step1 and step2, please refer to ***System Wiring Diagram for Configuration*** of this manual. Step3-step4 covers the process to complete 4-20mA Zero Calibration.

3. Run DTM-CFG software and enter into Advanced edition. On main window of DTM-CFG Advanced edition, select **4-20mA Calibration For User** command from **Calibration** menu to launch the window. See picture below. Then click **Start calibration** button in "Zero" field.

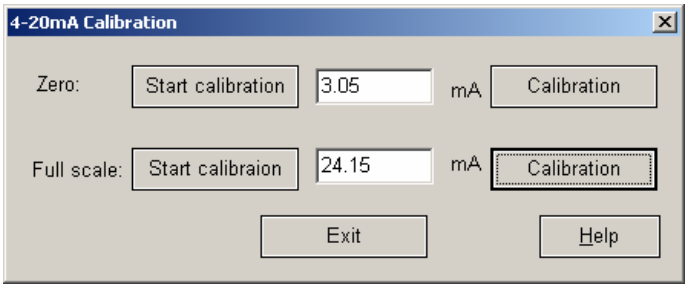


4. Read the current value from the amperemeter after it settled down, and then type it to the edit box. Later click **Calibration** button.



Step5-step6 covers the process to complete 4-20mA Full scale Calibration.

5. Click **Start calibration** button in "Full scale" field. Then read the current value from the amperemeter after it settled down and type it into the related edit box.



6. Later click **Calibration** button.
7. Click **Exit** button to complete the calibration.

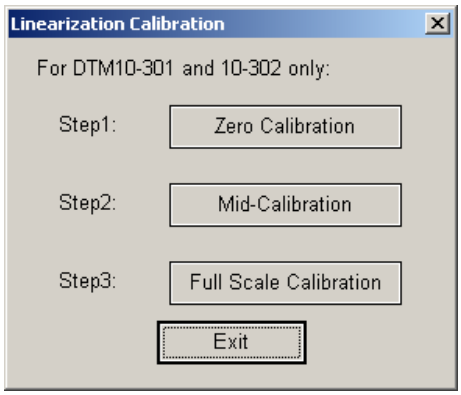
Linearization Calibration For User

Linearization Calibration is only available for DTM10-301 and DTM10-302. Ensure the following:

1. DTM device and DTM-CFG can normally communicate with each other;
2. Configuration parameters setting: While the transducer sensitivity is 8mv/um, the full scale range should be set from -1000um to 1000um; while the transducer sensitivity is 4mv/um, the full scale range should be set from -2000um to 2000um.

The Linearization Calibration process is below:

1. Connect the transducer and the DTM device. Please refer to ***System Wiring Diagram for Configuration*** of this manual.
2. Place the transducer on Static Calibrator;
3. Run DTM-CFG software and enter into Advanced edition. On main window of DTM-CFG Advanced edition, select **Linearization Calibration For User** command from **Calibration** menu to launch the window.



4. Adjust the Static Calibrator and set the value to 0.25mm. Then click **Zero Calibration** button.
5. Adjust the Static Calibrator again and change the value. If the transducer sensitivity is 8mv/um, set the value to 1.25mm; if the transducer sensitivity is 4mv/um, set the value to 2.25mm. After that, click **Mid-Calibration** button.
6. Re-adjust the Static Calibrator. If the transducer sensitivity is 8mv/um, set the value to 2.25mm; if the transducer sensitivity is 4mv/um, set the value to 4.25mm. After that, click **Full Scale Calibration** button.
7. Click **Exit** button to complete the calibration.

Accessories

USB-RS485: USB to RS485 converter with cable

USB-RS232: USB to RS232 converter with cable

DTM96: Isolated communication module

TM0540: Proximity probe field calibration kit

TM0541: Proximity probe shaft calibration kit