

# Delta 3300

## Quick Reference Manual

*(Full version of the manual is included  
in the CD)*



► Compact ► Easy to Use ► Best Value

**Defibrillator and  
Transcutaneous Pacemaker  
Analyzer**



Innovative Instruments Since 1987

PN:-660-417

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# **Notices**

## **Unpacking and Inspection of the unit**

Before unpacking the DELTA 3300 inspect the shipping box for any visual damage. If damage is found, do not unpack the unit and immediately notify the shipping carrier. If no damage is found to the shipping box, open the box and perform a visual inspection of the Delta 3300. If any damage to the unit is observed please contact Netech Customer Service.

The Service Return Form may be obtained at our web site <http://www.netechcorp.us/RmaRequests> or from the Netech Customer Service Department. [Customerservice@netechCorp.us](mailto:Customerservice@netechCorp.us)

## **Contact Information**




Netech Corporation, 110 Toledo St. Farmingdale, NY 11735.

Phone: 631-531-0100, 1-800-547-6557

Website: [WWW.NetechCorp.us](http://WWW.NetechCorp.us)

Email: [sales@Netechcorp.us](mailto:sales@Netechcorp.us)

## **Warnings**

<b>Symbol</b>	<b>Description</b>
	Caution Important Safety Information
	Hazardous Voltage
	Conforms to European Union Directive

## Intended User



**The Delta 3300 Defibrillator Analyzer is indented to be used only by a trained technician.**



**The Delta 3300 Defibrillator Analyzer intended for testing and verifying the performance of specifications of Defibrillators.**



**The Delta 3300 should never be used in a patient care location where it might come in contact with a patient.**



**The Delta 3300 Defibrillator Analyzer is intended to be used within the published specifications. Any unauthorized alteration or modifications will result in a hazardous condition or improper operation.**

## Environment



***The Delta 3300 should never be used in harsh environmental conditions outside the specifications as this will affect the performance of the unit.***



***The Delta 3300 should never be used in wet condition or in a flammable environment.***

## **Introduction**

The DELTA 3300 Analyzer is a precision, compact, battery operated, instrument for testing defibrillators and transcutaneous pacemakers. DELTA 3300 measures the energy output and ensures that the defibrillator complies with specified requirements. It is used for semiautomatic and automatic defibrillators with monophasic or biphasic outputs.

The DELTA 3300 has a built-in load resistance of 50 ohms, simulating the human body Impedance. The DELTA 3300 contact plates provide the electrical connection between the defibrillator paddles and the load resistance. When the defibrillator is discharged, The DELTA 3300 samples the pulse, calculates and displays the energy delivered.

In addition to the defibrillator function, DELTA 3300 tests all types of transcutaneous pacemakers. The dedicated function keys and menu driven display make it simple to operate. DELTA 3300 measures and displays a pulse's amplitude, rate, energy and width. It conducts demand sensitivity tests, measuring and displaying refractory periods, as well as immunity tests, which determine the pacemaker's susceptibility to 50/60 Hz interference.

### **Delta 3300 Features**

- Simple to use, utilizing dedicated function keys and a menu driven interface.
- Compact and light weight.
- Large 20 X 4 Character display with back lighting.
- Tests Monophasic and Biphasic outputs.
- Charge time measurement.
- Auto Range - Energy measurement.
- Cardio version delay measurement.

- Waveform storage and playback function.
- 12 lead ECG output.
- 7.4 Volt LI Ion batteries.
- 1M internal flash memory for storing test records.
- Rs 232 interface for uploading test data.

## **Intended Use**

The Delta 3300 is indented to be used to determine the performance specifications of the defibrillators and transcutaneous pacemakers

## **Specifications**

### **Defibrillator Analyzer**

#### **Energy Output Measurement:**

Maximum Energy: 800 J

Display Resolution: Based on Auto Range

Auto Range: 2 - 9.99 J, 10-99.9 J, 100-800 J

Resolution:: 0.01 J ( 2 -9.99), 0.1 J (10-99.9), 1 J (100-500)

Accuracy:  $\pm 1$  % of reading  $\pm 0.1$  J (2-9.9),  $\pm 1$  J (10-99),  $\pm 2$  % (100-500)

#### **Load Resistance:**

50 ohms  $\pm 1$  %; non-inductive ( $< 1 \mu\text{H}$ )

Sampling Time: 20  $\mu\text{s}$

Measurement Time Window: 60 ms

Absolute Max Peak Voltage: 5000 V

Absolute Max Peak Current: 100 A

Pulse Width: 60 ms

#### **Waveform Storage / Playback:**

Discharge waveform: ECG outputs leads and through paddle contacts.

High Level Output: 100:1 Time Base Expansion

**Sync Time Measurements:**

Timing Window: Starts at each R wave peak

Test Waveforms: User selectable ECG rates.

Delay Time Accuracy:  $\pm 1$  ms.

**Charge Time Measurement:**

Countdown Timer: User selectable - 30, 45, and 60 seconds.

Energy Charge Time: Display the charge time measured from the time the start button is pressed to the discharge.

**Transcutaneous Pacemaker**

Test Load Range: 50 to 1100 ohms in step of: 100 ohms.

Accuracy: 50 - 500 ohm  $\pm 1$  %, 500 - 1100 ohm  $\pm 1.5$  %

**Pulse Measurements:**

Amplitude: 4 to 400 mA (50 ohm load)

Accuracy:  $\pm 1$  % or  $\pm 1$  mA

Max. Amplitude: 400 mA all loads

Rate: 30 to 800 ppm

Accuracy:  $\pm 1$  % or 2 ppm

Pulse Width: 0.5 to 50 ms

Accuracy:  $\pm 1$  % or  $\pm 0.3$  ms

**Demand Sensitivity Test:**

Waveforms: QRS, Square (SQR), Triangle (TRI), and Haversine (SSQ)

**Waveform width:** 40, 50, 60, 70, 80, 90, 100, 200, 300, 400 ms

**Pacer Rate:** 30 to 120 ppm

**ECG Output:**

Amplitude: User selectable: 0.1, 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0 and 5 mV



**Pacer Input (Load dependent):**

Amplitude (50 ohm): 0 - 10 mV

Resolution (50 ohm): 25  $\mu$ V

Amplitude: (500 ohm): 0 - 100 mV

Resolution: (500 ohm): 1 mV

Accuracy:  $\pm 2\%$

**Immunity Test:**

Interference Signal: 50Hz / 60 Hz

ECG signal Amplitude: 0.5 to 5.0mV

**Refractory Period Measurement:**

20 to 500 ms (both Pacing and Sensing)

Accuracy:  $\pm 5$  ms

**Patient Simulator**

Waveform Simulation: ECG (NSR),

ECG Rate: 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 220, 240, 260, 280, 300, 310

BPM

Accuracy:  $\pm 1\%$

Amplitude: 0.1, 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 mV.

Accuracy:  $\pm 2\%$  @ Lead II (Square Wave)

Output Impedance: RL to all leads 1000 ohms.

High Level Output: 0.5 V/mV of low level (lead II)

**Arrhythmia Selections:**

Ventricular Fibrillation Coarse (VFBC)

Ventricular Fibrillation Fine (VFBF)

Ventricular Tachycardia (VTAC)

Atrial Fibrillation (AFIB)

**Performance Waveforms:**

Sine, Square, Triangle:

Rate: 0.2, 0.3, 0.4, 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 Hz.

Amplitude: 0.1, 0.25, 0.50, 1, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 mV.

Amplitude accuracy:  $\pm 2\%$  (Square Wave -Lead II 1.0 mV )

Pacer Pulse:

Pulse width: 10 mS.

Rate: 120 PPM.

Amplitudes: 1.0 mV (Lead II)

Amplitude accuracy:  $\pm 2\%$  (Lead II 1.0 mV)

**General Specifications****Temperature Range:**

Operating:  $+15^{\circ}\text{C}$  to  $+35^{\circ}\text{C}$  ,

Storage:  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ .

**Display:**

Type: LCD with LED back lighting.

Alphanumeric format: 4 lines by 20 characters.

**Data Input/Outputs (2):**

RS-232C (1) for Computer control.

**Power:** 7.4 Volt Li Ion Battery. 100-230 VAC input 8.5V Battery Charger.

**Housing:** High impact ABS Plastic case.

**Dimensions:** D x W x H: 10.25 x 6.25 x 2.5 Inch. 26 X 16 x 6.4 Cm

**Weight:** 1.5 kg / 3.3 lbs. with Battery.

## Part Numbers and Ordering Information

**Part No:**       **660:** DELTA 3300 Defibrillator / Transcutaneous Pacemaker Analyzer *(All Standard Accessories are included).*

### Standard Accessories:

**661:** Internal Paddle Contact Adapters  
**660-CD:** User and Service Manual DELTA 3300  
**660-HHS-001:** Li-ion Battery (7.4V/850mA)

**660-PADDLE-ADAP:** Defibrillator Paddle Adapter (2)

**660-610-6353:** Standard Pacemaker Adapter cable

**660-HARD-CASE:** Hard Carrying Case

**660-ProComPrint:** ProComPrint Software Ver1.0 (Open Source)

### Optional Accessories:

**661-651-HP:** Interface cable for HP (AED Model Specific)

**660-651-PHYSIO:** AED interface cable for Physio control

**660-651-ZOLL:** AED Interface Cable for ZOLL

**660-PRO-PRINT-VR2:** PRO-Print Software (Version 2.0)

**660-250-RS 232-USB:** Standard Rs 232 to USB cable

**Note:** Various manufactures model specific interface cables are available. Please call for the part number or visit [www.NetechCorp.us](http://www.NetechCorp.us)

## **Preparation for Use**

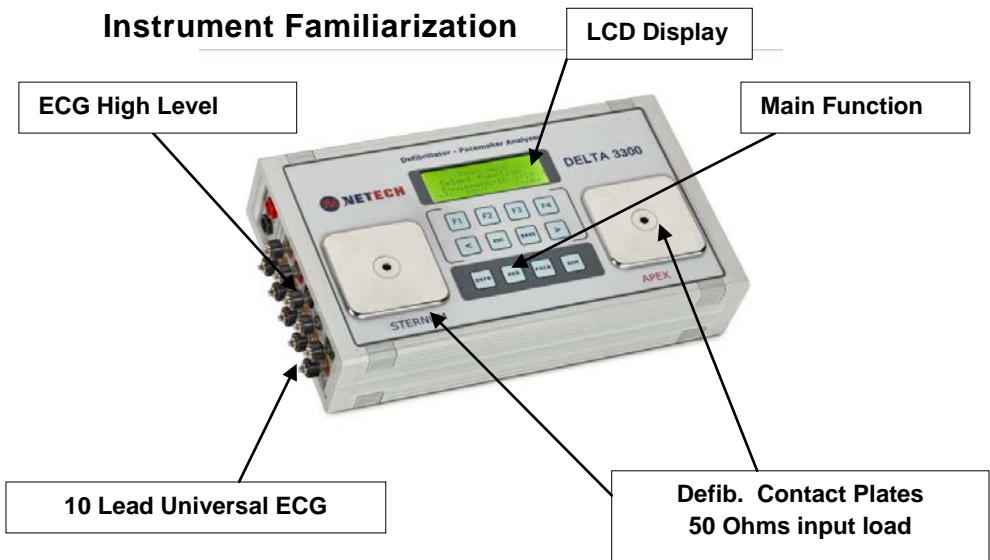
The Delta 3300 is shipped with the following items included in the customized hard case:

- Delta 3300 Defibrillator / Transcutaneous Analyzer.
- Li Ion Battery Charger (110/220 V input)
- Paddle contact adapter for AEDs (2 Pieces)
- Transcutaneous Pacer Interface cables
- User manual / Print software CD



***Before getting started it is important to get familiar with the control and operation of the unit.***

### **Instrument Familiarization**



## Display

The Delta 3300 incorporates a high contrast 20 X 4 LCD display with LED back lighting for easy viewing.

## Key Pads

The keypad utilizes soft touch tactile keys, providing a fluid resistant barrier to the internal circuitry. When a key is pressed a beeping sound will be heard to indicate that the key is activated. The dedicated key functions and interactive menu make it easier to use.

The following are the description of the key functions; F1, F2, F3, F4, <, and >.

These keys are interactive associated with the respective function selections.

**“ESC”**: Brings you back to the previous menu.

**“SAVE”**: Saves the displayed test data in to the storage memory under the unique ID of the unit under test.

**“DEFB”**: Displays the Defibrillator Test Function. Additional selections are available with F1, F2 and F4 in the menu.

**“AED”**: Displays the AED Test Function. Additional selections are available with F1, F2 and F4 in the menu.

**“PACER”**: Displays the transcutaneous Pacer Test Function. Additional selections are available with F1, F2, F3, F4, < arrow and > arrow in the menu.

**“SIM”**:- Pressing the key will display the Simulator Function. Additional selections are available with F1, F2, F3 and F4.

## **Paddle Contacts Plate.**

Defibrillator paddle contacts are marked “APEX” and “STERNUM”.



***Do not use AED pads directly on the paddle contacts. Use the insulated paddle contact cover included with the unit and the recommended cables for the particular AED model.***

## **ECG Output Connectors:**

10 universal patient lead connectors color-coded for easy identification of the leads.

## **ECG High Level Output Connectors:**

High level ECG output connectors are marked on the side panel next to the ECG leads.

## **Power ON/OFF Switch:**

The power ON/OFF switch is located on the right side panel. This switch powers the unit on/off.

## **Pacer Input Connector:**

Transcutaneous Pacer input connections are marked ‘Trans. Input’.

## **Pacer Input Load Selector:**

Transcutaneous input load can be easily selected by using the rotary switch.

## **Battery Charger Input connector:**

DC jack (2.1mm)- Li Ion battery charger Input connection.

**Serial Interface Connector:**

D-sub 9 connector located on the right side panel provided for establishing communication with PC for uploading test data using the supplied RS232 or the optional RS232 /USB interface cable.

**Battery Compartment:**

The Battery compartment is located on the back of the unit. It contains a 7.4 Volt Li-Ion rechargeable battery specially designed for the unit with a built-in protection circuit. The battery is partially charged prior to shipment.

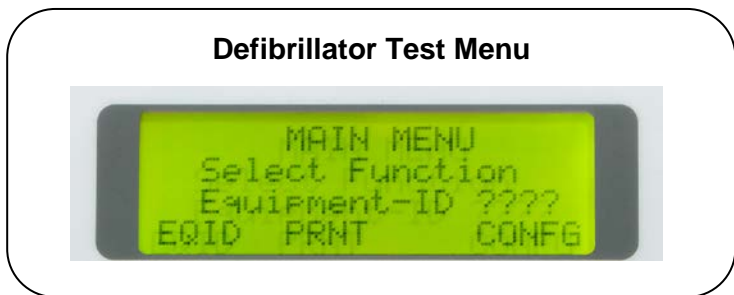
When the unit is powered, it checks the battery condition and if it detects a low battery condition a warning message will appear on the display.

To continue operation, connect the charger to a live outlet. When the battery is fully charged the red led on the charger will turn to green.

# **Defibrillator Testing**

## **Introduction**

The Delta 3300 can be turned ON by sliding the ON/OFF switch located on the right side panel. When the unit is first powered, the screen momentarily shows the software version and the build number then will display the Main Menu as shown below.



In this menu the user can input a 4 digit Equipment ID of the unit under test (DUT). The test results that are saved will be designated under this unique ID and available for uploading to a PC and print. Therefore it is very important to change the ID when a new unit is being tested.

## **Equipment ID**

Press F1 for the equipment ID set menu. Use F1, F2, F3, F4 to toggle the digits from 0-9. When done press the “SAVE” key. The Equipment ID is now saved and will be displayed in the main menu.

To change the ID go back to the previous step.



## Clock Setup

The Analyzer has a real time clock. The clock is setup at the factory. The test results saved under the Equipment ID set along with date and time. Therefore it is important to reset the time clock to the region where the unit is used. The time, date, month and year can be set individually from the 'CONFIG' menu.

To reset the time follow the steps:- (Time is set in the order Hour, Minute, Second)

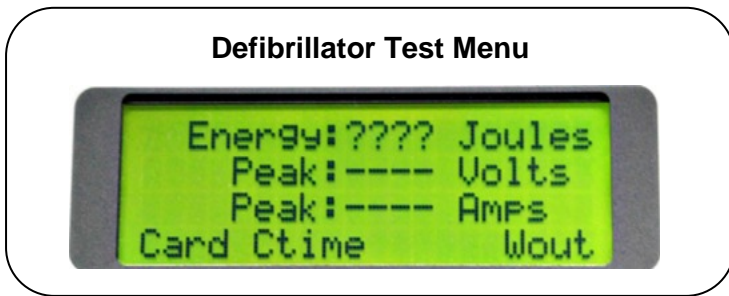
- From the main Menu press F4 ('CONFIG')
- From The 'Configuration Menu' press F1 ('TIME') to set Hour, Minute and Seconds.
- Use F1 or F2 to set the hour.
- Press F4 ('NEXT') to change the minute. Use F1 or F2 to set the minute.
- Press F4 for setting the seconds. When done press "ESC" key to the 'Configuration Menu'.

To reset the Month, Date and Year follow the steps:- (The sequence is Month, Date and Year)

- From the 'Configuration Menu' press F4 ('DATE'). Use F1 or F2 to change the month displayed.
- Press F4 ('NEXT') to set the Date. Use F1 or F2 to change the Year.
- Press F4 ('NEXT') to set the Year. Use F1 or F2 to change the Year.
- When done press 'ESC' twice to the main Menu.

## **Defibrillator Energy Measurement**

From the main Menu, select the Defibrillator function by pressing “DEFB” key. The following screen will be displayed. The three measurement functions of the defibrillator are energy, Cardio version (sync time), charge time.



The contact plates of Delta 3300 are marked APEX (+) and the STERNUM. Securely place the defibrillator's APEX and STERNUM to the respective contact plates on the Delta 3300. This ensures correct signal polarity of the stored waveform through the high level output ECG leads and through the paddle contacts. Reversal of this configuration will not damage or give incorrect energy readings. However, the polarity of the oscilloscope output will simply be reversed.

### **Energy Measurement**



#### **WARNING**

***When testing a defibrillator, follow the manufacturer's test protocols and safety precautions.***

- Set desired energy on the defibrillator.
- Discharge the defibrillator. When the unit detects the voltage, the flashing '????' on the screen stops and the discharge energy as well as peak voltage and current will be displayed.
- An important feature of the Delta 3300 is the auto ranging function, which ensures precision energy measurements. Energy readings under 10 will be displayed with 2 decimals, 10 joules to 100joules one decimal, and over 100 Joules no decimal.
- The pulse waveform is captured and saved until the next discharge. The waveform can be viewed through the paddle contact on the defibrillator, or on the defibrillator ECG leads, or on a scope through the High level output jacks.
- To view the waveform through the paddle or through the ECG leads or on a scope, press F4 "Wout". The waveform will be expanded 100 times the time base.
- If the defibrillator is discharged again, the current reading will be erased and the new energy reading along with the peak voltage and current will appear on the display. The stored waveform will be overwritten with the new discharge pulse.

## **Saving Test Results**

To save the test result displayed each time after discharge, press the save key.

All saved test results will be saved in the internal flash memory, tagged with the Equipment ID set in the earlier step. As many as 2000 test records can be saved in the internal memory.

For uploading test results to a PC refer to “Print” section in this manual.

## **Cardio version Test**

1. From the defibrillator menu select “Card” with F1 for the cardio version menu as shown below. The default waveform is set to ECG @ 80BPM.
2. Set the defibrillator in synchronous mode.
3. For synchronizing the ECG through the ECG leads, connect the ECG leads of the defibrillator to the ECG output connectors. The defibrillator will synchronize with the ECG rate and instantly discharge the energy. The energy and the sync time will be displayed.
4. To set the ECG rate and measure the sync time press F1. Each time F1 is pressed the rate will be increased by 10 BPM.
5. To change the amplitude of the ECG press F4 and select the desired amplitude. The selected amplitude will blink and the amplitude will update.
6. To save the cardio test result press save. The cardio version (Sync) time and the ECG rate and the amplitude set will be saved under the Equipment ID entered earlier.

## Charge Time Test

The charge time function is used to test the charging time of the capacitor and the battery of the defibrillator.

1. Set the defibrillator energy to maximum (*do not charge at this time*).
2. Select “CTime (F2) from the menu.
3. Select “Start” (F4).
4. Set the desired count down time. The countdown starts from the set value and shows on the screen.
5. Place the paddle firmly on the contact plates and wait for the beep.
6. At the beep press the charge button on the paddle of the defibrillator and press the discharge button of the defibrillator.
7. When the defibrillator is fully charged it automatically discharges into the paddle and the time will be displayed on the screen.

## **AED Shock Advisory Test**

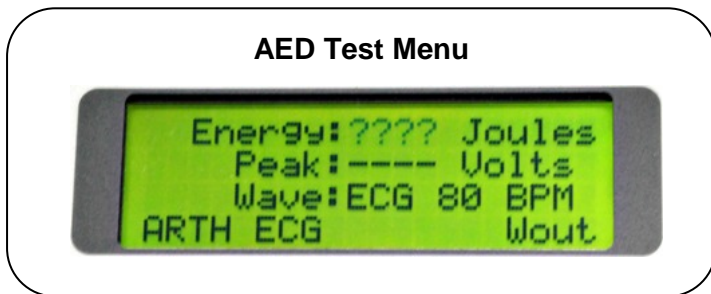
This tests the automatic and semiautomatic external defibrillators ability to analyze and prompt the energy discharge. A series of arrhythmias as well as normal sinus (ECG) waveforms are available for analysis by the AED that should prompt the user to shock or no shock.



### **WARNING**

***Before getting started, follow the manufactures safety instructions and test procedures.***

Select the function key marked AED. The following screen will be displayed



1. From the AED menu select Arrhythmia "ARTH" (F1)
2. Select the Arrhythmia (F1) or ECG (F2) menu.
3. For testing the shock advisory select the desired arrhythmia.
4. Insert the Paddle insulation plate fully over the paddle contacts.

5. Connect the AED using the optional AED cables specific to the model to the jack on the paddle cover.
6. Turn the AED on and follow the manufacturer's test procedures..
7. The AED will analyze the waveform and audio alert for 'shock' or 'no shock'.
8. If shock advised the AED will discharge and the discharged energy will be displayed.
9. To stop the 'shock' advisory, select "ESC" and F2 from the AED menu to run an ECG (NSR) waveform.
10. The AED will announce 'no shock' advised message.

## **Transcutaneous Pacemaker Test**

The Delta 3300 tests various types of transcutaneous pacemakers. All pacer test functions are menu driven and simple to operate.

It measures and displays a pacer pulse's amplitude (current), peak voltage, rate, width and energy.

It also conducts pacemaker demand sensitivity tests, measuring and displaying refractory periods, and immunity tests, which determine the pacemaker's susceptibility to 50/60 Hz interference.

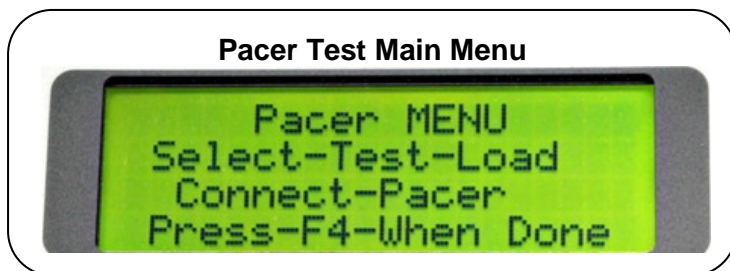


### **CAUTION**

**DO not discharge defibrillator pulses into the pacer inputs as this will damage the analyzer.**

### **Pacer Pulse Measurement**

1. Select the Pacer function key "PACER"
2. The following menu will be displayed.





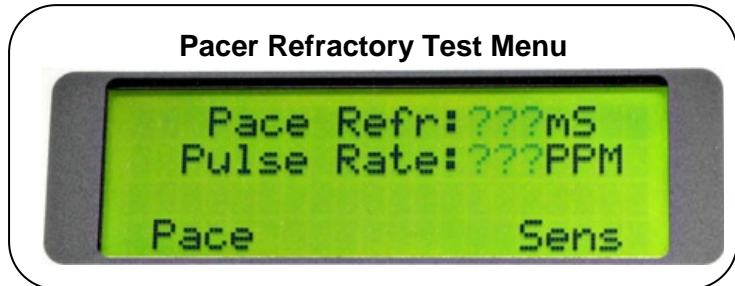
3. Connect the pacer output cables to the pacer input connectors on the right panel marked Trans. Input.
4. Select the desired load and press F4.
5. Set desired rate width and amplitude (current) on the pacemaker.
6. The display will flash “????” until the pulse is detected and the rate, width and the current will be displayed.
7. Use ‘<’ or ‘>’ keys for displaying peak volt, energy and current
8. The measurement cycle continues and the display is updated.
9. To save the test result presses the “SAVE” key.
10. The test result displayed will be saved with Equipment ID set in the beginning.

## **Pace Refractory Test**

Refractory period of a demand pacemaker is the time interval during which a pacemaker is insensitive to ECG signal. If an ECG signal is detected during this period, the pacemaker ignores it. However If an ECG is detected outside the refractory interval, then the pacemaker resets its internal timer and the next pacer pulse is generated after a delay of one time period from this ECG wave.

Measurement of the pace refractory takes a few cycles of the pacemaker output. Delta 3300 measures the pacer pulse interval and puts out a QRS wave @ 40 milliseconds wide, delayed by a time, determined initially by checking the pacer

rate. The pacemaker senses this QRS wave. The delay time is gradually decremented until the QRS waveform is not sensed by the pacemaker. The maximum value of the delay time, for which the pacemaker does not sense the square wave, is the paced refractory period.



1. From the Pacer Test Main Menu select "Refr" (refractory) with F1
2. The following Refractory Menu will be displayed.
3. Set the pacemaker in demand mode.
4. Select "Pace" (F1). The pace refractory and the pulse rate will be displayed after a few seconds.
5. The measurement cycle continues and the display is updated.
6. To interrupt the measurement press "ESC" key.
7. To save the test result press save. The result will be saved to the Equipment Id set earlier.

## Sense Refractory Test

The sense refractory time is the interval after a QRS wave is sensed by the pacemaker during which time the presence of a second QRS wave is not sensed.

The sensed refractory period is measured similar to the pace refractory, except that DELTA 3300 now generates a QRS outside of the paced refractory period. The pacemaker senses the QRS. The QRS time is slightly increased each time with the pacer pulse until the pacer pulse senses the QRS and resets. The delay time from the first QRS to the sensed QRS is the sensed refractory period. The measurement takes a few cycles, when the '????' on the screen stops, the result is displayed.

1. Select "Sens" (F4). The Sense refractory and the pulse rate will be displayed after a few pacer pulse cycles and the flashing of '????' stops and the result will be displayed.
2. The measurement cycle continues and the result is updated. To interrupt the cycle press "ESC" key.
3. To save the test result press save. The result will be saved to the Equipment Id set earlier.

## Sensitivity Test

Pacer sensitivity period is the minimum QRS amplitude (mV) required to cause the pacemaker to operate in the demand mode. During sensitivity measurement three different waveforms are selectable, with widths varying in steps from 10 to 400 mS. The selected waveform is delayed from the pacer pulse so that it is outside the pacing refractory period. Delta 3300 checks whether this wave is sensed by the pacemaker or not.

If it is not sensed the message “Lower the Rate” will be displayed.

The amplitude of the QRS is gradually increased from 0.1 mV steps or 0.25mv until Delta 3300 detects pacer pulse. The amplitude at which the pacer pulse is sensed is the sensitivity in mV.

1. Select (F2) from the Pacer Test Menu. The sense refractory menu will be displayed. The default waveform is ECG and width is 40 mS.
2. Press F2 to change the width of the waveform.
3. Press F1 to change the Waveform.
4. When done, select F4 to start the test.
5. The rate and the sensitivity in mV will be displayed.
6. If the selected width of the waveform is greater than 1/3 of the pacer width a message “Lower the Rate” on the display. If this occurs lower the pulse rate on the pacemaker.

## Noise Immunity Test

The immunity test determines the pacemaker's susceptibility to 50/60 Hz interference signals. The test can be performed with or without ECG waveform.

From the Pacer Test Menu select F4 (“Imu”).

Select the desired frequency, 50Hz or 60 Hz, from the noise Immunity test menu.

To change the amplitude of the sine wave use ‘<’ ‘>’ keys.

To enable ECG select F1.

## **ECG Simulation**

The Delta 3300 simulates ECG, Arrhythmia and performance waveforms as well as pacer pulse. The amplitude and rate of these waveforms is user selectable from the menu.

Select the simulator function key marked “SIM”. The following waveform selections are available in Simulator menu. The abbreviations used in the menu are described below.

NSR – Normal Sinus Rhythm.

ARTH – Arrhythmia waveforms

PACR – Simulated Pacer waveform

PERF– Performance waveforms, Sine, Triangle, Square.



### **Setup**

1. If the ECG leads of the unit under test are not connected, connect the leads to the respective color coded ECG snap studs.
2. Select the desired waveform use F1 or F4.
3. To select the desired rate or amplitude using F1 or F2.
4. Use > < keys to scroll for additional selection of rates or amplitudes.

5. The selected waveform, rate, and amplitude is displayed and the waveform can be observed on the monitor of the DUT.
6. The selected waveform and the rates and amplitudes are saved until it is changed.
7. To change the waveform use “ESC” key.

## **Save and Print Test Results**

### **Introduction**

As mentioned earlier, test results can be stored into the memory under the user specific “ID” and available to be uploaded to a PC using the serial to USB cable.

### **Saving Test Results**

When the test results are displayed in any of the test functions, press “save” key.

The results will be saved under the Equipment ID set earlier in the non-volatile internal memory. However when the memory is full it will flash an error message, indicating that no more records can be saved.

The test results saved are ready to be uploaded to a PC using the ProComPrint software supplied with unit. The ProComPrint is compatible with Windows XP and Windows 7.

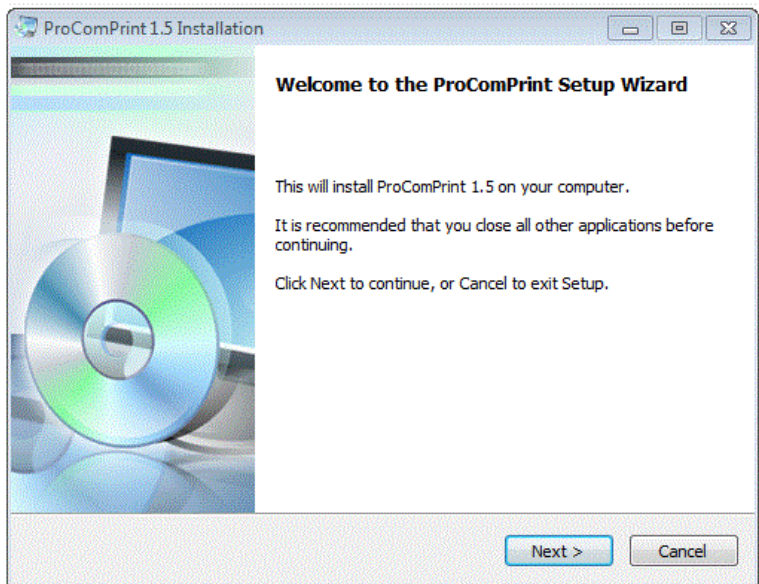
### **ProComPrint Software Setup**

ProComPrint (Ver1.5) included in the CD is a basic version of the ProCom software for quickly configuring a HyperTerminal communication protocol and uploading of the test data to a word format file for printing and saving the test results to a file in the PC.

**Note:** The advanced ProComPrint (Ver2.0) is a database version customizable to meet individual requirements.

Run the ProComPrint by double clicking the ProComPrintSetup.EXC. Follow the on screen instructions. When the installation is complete a window appears as shown below.

- To setup the software follow the instructions below.
- Insert the ProCom Software CD in the PC.
- Double click on the Setup.Exe
- The following welcome screen will appear.

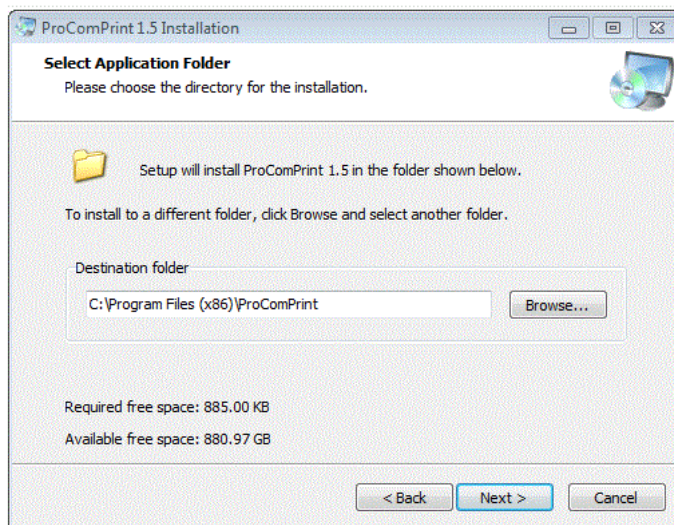


- Click Next.

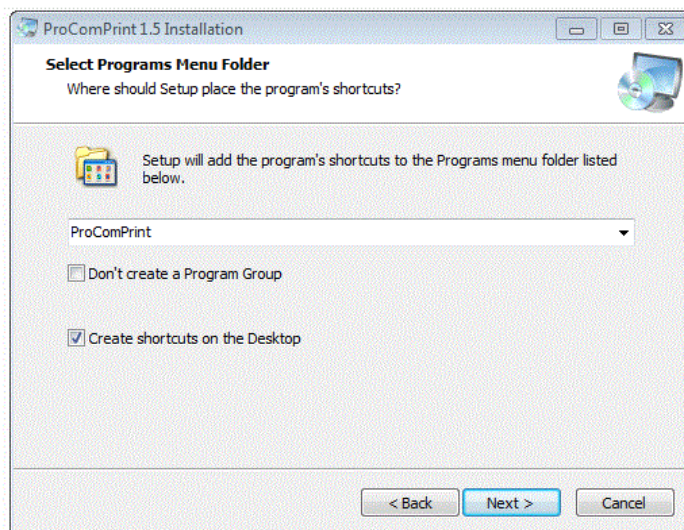
The following "Select Application Folder" Screen appears as shown below.



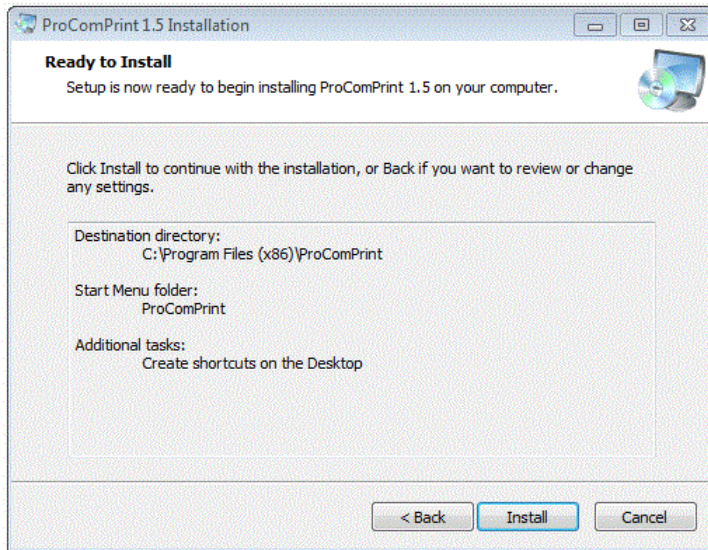
The destination folder to which the results are to be saved need to be set. The default folder is set to C:\Program Files\ProComPrint. To change the folder click, on “Browse” and set the folder in the desired directory.



- Click Next. The following screen will appear.

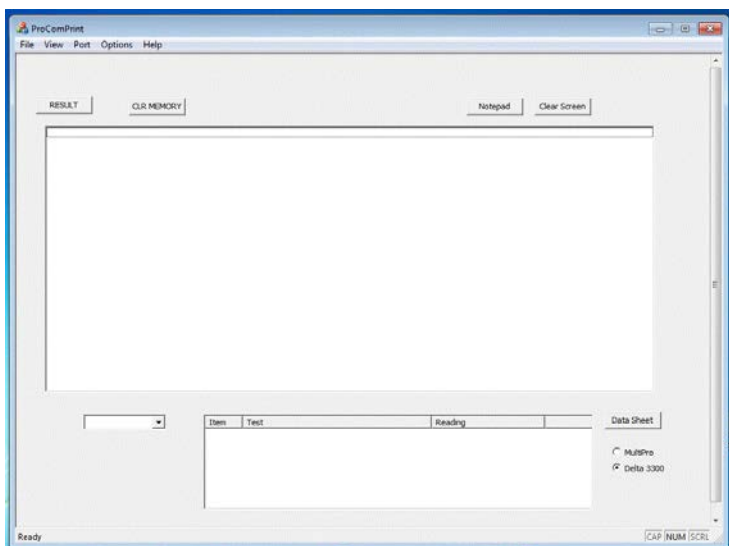


- Click Next. The following screen will appear.



- Click Install.
- Click "Finish" in the next screen.

The following ProPrint Main screen will appear.



## Uploading Test Results to PC

Once the ProComPrint software installation is completed, follow the procedure to upload the test results to the PC.

Connect the Delta 3300 to the PC using the RS232 or (RS232/USB) cable to the PC.

Turn the Delta 3300 Power ON.

A message “STM32 Boot loader” will appear on the screen as shown below conforming that a communication is established between the PC and the Delta 3300.

The installation of the software is now completed and ready for uploading the test results.

## ProComPrint Software Features

Following are some of the main features of the software.


Standard Pull Down Menu (File, Edit, Port, Help, Options). Only the relevant menus are enabled in the basic ProComPrint Version 1.0 version.

In addition to pull down menu there are six individual selections as highlighted in the Screen Shot below.



**“Result”**: – Click on this will down load all the saved test results from the MultiPro memory into the top screen.

**“Select Equipment ID”**:-If multiple units are being tested, the results of the individual units can be down loaded by selecting the Equipment ID using the “v” arrow.

**“CLR MEMORY”** :-  This will clear all the saved records from the Delta 3300 Memory.

**“Notepad”**: - The down loaded test results can be opened in the notepad for filling necessary Device information and save in the PC and print.

**“Clear Screen”**:- This will clear the test results displayed in the screen.

**“Data Sheet”**:- A sample “Word” template of the printout (as shown below) is included in the “ProComPrint Ver 1.0.

Note: Sample Data Sheet can be opened and printed only if a licensed copy of the word is installed in the PC.

The test results that are saved will be automatically filled in the appropriate fields as shown in the below.

## Uploading Test Results

To upload all the test results, select “PRN” (F2) from the “MAIN MENU”. The “Print MENU” will be displayed.

The following are the Print menu options:-

**“HEAD”** – Select F1 for uploading a blank header with user editable fields.

**“RESULT”**- Select F3 for uploading all saved test results.

**“CLR”** – Select F6 for clearing all the records saved in the memory.

The test records that are uploaded to the PC can be saved in to a text file. As mentioned earlier, the file can be opened on notepad and fill in all relevant DUT information and saved to the PC for printing and record keeping.

**Netech Corporation**  
Defibrillator Analyzer Test Record

<b>Location of DUT:</b>	Test result prior to service <input type="radio"/>
<b>Name of Testing Person:</b>	Recurrent Test <input type="radio"/>
<b>Name of Organization:</b>	Test after repair <input type="radio"/>
<b>DUT Manufacturer:</b>	Equipment Test ID: 0001
<b>GUI (Global Unified Identification) No:</b>	Date: 5/4/2017

**Test Data:**

<b>Function:</b> Defibrillator (Energy) Test Load 50 Ohms 1. Energy Measured: 48.7 Joules Voltage 1048 Volts Current 21.0 Amps 2. Energy Measured: 98.1 Joules Voltage 1486 Volts Current 29.7 Amps 3. Energy Measured: 201 Joules Voltage 2126 Volts Current 42.5 Amps 4. Energy Measured: 201 Joules Voltage 2126 Volts Current 42.5 Amps	Complies (Pass) Yes No
<b>Function:</b> Defibrillator (Cardio Time) 1. ECG Wave: ECG Ampl: 1.0 mV Cardio Time: 22 Ms 2. ECG Wave: ECG Ampl: 1.0 mV Cardio Time: 22 Ms	Complies (Pass) Yes No
<b>Function:</b> Defibrillator (Charge Time) 1. Energy: 97.9 Joules Charge Time: 2.4 Sec	Complies (Pass) Yes No
<b>Function:</b> AED (Energy) Test Load 50 Ohms Wave: NSR 1. Energy Measured: 99.8 Joules Voltage: 1499 Volts Current: 30.0 Amps 2. Energy Measured: 0.06 Joules Voltage: 2.5 Volts Current: 50.6 Amps 3. Energy Measured: 0.06 Joules Voltage: 2.5 Volts Current: 50.6 Amps	Complies (Pass) Yes No
<b>Function:</b> Pacemaker - Pulse Test Load _____ Ohms 1. Pulse Rate: 70.2 PPM Width: 21.1 mSec Current: 50.6 mAmp	Complies (Pass) Yes No
<b>Function:</b> Pacemaker Pace Refractory 1. Paced: 280.00 mS Rate: 70.1 PPM	Complies (Pass) Yes No
<b>Function:</b> Pacemaker Sense Refractory 1. Sense: 150.00 mS Rate: 70.1 PPM	Complies (Pass) Yes No
<b>Function:</b> Pacemaker Immunity 1. Sine Wave: N/A Ampl: N/A	Complies (Pass) Yes No
<b>Function:</b> Simulator 1. N/A Freq: N/A Ampl: N/A	Complies (Pass) Yes No

Data Taken By: \_\_\_\_\_ Date: / Signature: \_\_\_\_\_

## **Warranty**

*Netech warrants this instrument to the original purchaser, as purchased from a Netech distributor or dealer, will conform to the written specification as of the date of its manufacture, for a period of two years from the date of purchase. The second year warranty is contingent upon returning the unit to the factory for the annual recalibration at the end of the first year warranty. Netech warrants this instrument against defects in materials and workmanship. If the it fails to conform to these warranties, Netech will repair or replace the unit and/or its components within a reasonable period of time if the DELTA 3300 is returned, shipping prepaid, to Netech's facility at Farmingdale, NY, USA within the warranty period as expressed above.*

*These warranties are made upon the expressed condition that:*

- 1. The purchaser promptly notifies Netech in writing of any non-conformity with the above warranty including a detailed explanation of the alleged deficiencies.*
- 2. The Delta 3300 is returned to Netech at the buyer's expenses only after obtaining the proper [RMA](#) authorization from Netech.*
- 3. Netech will not be liable for any incidental or consequential damages.*
- 4. In the opinion of Netech upon inspection, the Delta 3300 has not been misused, altered, or damaged due to the abnormal handling and/or operation.*
- 5. Repairs to the Delta 3300 and/or its components have not been made by anyone other than Netech or one of its authorized repair agents.*
- 6. The Delta 3300 has not been modified, altered, or changed in any manner by anyone other than Netech or one of its authorized repair agents.*
- 7. All shipping and handling charges will be billed to the purchaser.*

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**To receive free software and firmware updates, please fill out and send the warranty registration card or fill out on line warranty registration:- <http://www.NetechCorp.us/warranties>**



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