Max Pulse
Training Manual

The following training manual outlines and describes the measurements and data that is collected by the Max Pulse screening device. Some of the additional information listed can be found at www.thecardiogroup.com.
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Chapter 1—Start Menu

1. Click to start screening session.
2. Identifies language, type, version, and statistical reference (Asia vs. West). To change, see “Setup Access” and “Setup”.
3. Minimize the Max Pulse software.
4. Exit the Max Pulse software.

Chapter 2—Setup Access

1. Place you cursor in the general area of the asterisk (approx. 1.5” from the bottom of the box and approx. 1.5” from the right side of the box). Then, press and hold down the left cursor for approx. 5 seconds.
2. A hidden Setup box pops up. If having problems, continue to move the cursor to different parts of the bottom corner and press and hold the left cursor until the hidden Setup box appears.
Chapter 3—Setup

1. Use the drop down menu to change the COM port settings if necessary. (The factory setting is defaulted to COM2).
2. Use the drop down menu to change from Asian statistics to Western statistics (The factory setting is defaulted to Asia).
3. Change the volume by clicking on the blue bars. To mute the volume, click on the speaker icon.
4. Place the name of the practice or individual and the contact telephone number here. Note: The name and phone number will print on the bottom of the Max Pulse reports.
5. Click here to adjust the X and Y axis to center your report when printing (The Max Pulse will print to the default printer selected on your computer). You can print a test page here.
6. **DON'T USE THE DATA BACKUP!** It will erase the information from your Max Pulse data base!
7. Click to cancel any changes made in this section.
8. Click to save changes and exit.

Chapter 4—Patient Information

1. Click here to assign the gender. Also, place the name here (Either first, then last name or visa versa. Just be consistent). Use the full year (four digits) and month and day (two digits). The ID can be the patient's record number or whatever other filing/tracking system is used in the office.
2. List of patients by ID, Name, Gender, and date of birth. When you click on the “Male” gender, the male list pulls up. When you click on the “Female” gender, the female list pulls up (When returning to retest a patient, as you start to type their name or ID, their records will pull up. Highlight the name and click “Next” to retest or as you highlight a name you will see a “Result” tab appear. You can look at past tests and compare them by clicking the “Result” tab).
3. You can highlight a patient and then delete them from the Max Pulse data base.
4. Click here to go to the Max Pulse Start Menu.
5. Click here to continue testing a new patient or if this is a retest of a current patient, highlight their name and click “Next”.

Chapter 5—Measurement

1. Name of Patient and Gender is displayed.
2. The Heart Rate or Beats per Minute is displayed using a graph and numerical value that will change during the course of a three minute screening.
3. Plethysmograph (PTG): The “basic” waveform signal that indicates pulsation of chest wall and great arteries followed by heart beat (see Accelerated Plethysmography (APG) & Pulse Wave Velocity (PWV)).
4. Accelerated Plethysmograph (APG): The “final analysis” waveform. The APG measures the blood circulation state and aging level of blood vessels in regards to vascular elasticity and hardening, through the signal at the finger tip. APG uses the second derivative of the waveform of the digital photoplethysmograph to stabilize the baseline and to separate components of the waveform more clearly and distinctly (see Accelerated Plethysmography (APG) & Pulse Wave Velocity (PWV)).
5. HRV (Heart Rate Variability) Tachogram: A green linear record displaying the HRV information (see HRV Overview) collected during a three minute period of time (indicated by the pink bar). If the linear representation is erratic (dramatic highs and lows), then a number of issues may need to be addressed (see HRV Erratic Readings).
6. HR (Heart Rate) Variability: A graphical representation of time (yellow dots). The dots plot the time between the top of each R-R interval (the time between one upper beat and the next upper beat). The more the dots are dispersed and spread out in a group, the more varied and adaptable is the patient’s heart (see HRV Overview). If the yellow dots are scattered all over the inside of the box and are not grouped, then a number of issues may need to be addressed (see HRV Erratic Readings).
7. Information Box.
8. Click the “Back” button to go to the previous page, the “Start” button to begin the screening, and the “Stop” button to stop a current screening.
Chapter 6—Report 1

1. Name of Patient and Gender is displayed.
2. PTG (Plethysmograph) and APG (Accelerated Plethysmograph): These screens display the three minute screening “average” for the basic and finalized wave forms. Mathematical calculations are then derived from the different values collected (i.e. a, b, c, d & e) and are represented graphically (see #6 and Accelerated Plethysmography (APG) & Pulse Wave Velocity (PWV)).
3. Aging Vascular Health displays the average wave type, by percentage (The percentages may be spread out or 100% in a given wave type) collected by the Max Pulse during the three minute screening (there are seven different wave types). Wave Type 1 is considered the ideal wave type. The patient’s Wave Type will be displayed in dark blue. The ideal wave (Wave Type 1) will be displayed in light gray in the background. If a patient’s Wave Type is “1”, then their Wave Type (dark blue) will be on top of the gray line, so it will not be seen. Note the red slope drawn from the first valley to the second valley. A Wave Type 1 has a step vertical slope. As the Wave Types go down the list (1-7) the slope descends on the right side, so the slope becomes flat and eventually turns down hill.
4. The current date and time of the test. The drop down menu may be used to compare different test results for that patient.
5. Displays the Wave Type that was seen the most during the three minute test.
6. This section statistically compares the patient to their peers (Age and Gender) and plots their data as sub-optimal, normal, or optimal. The information is graphically shown using bars and numerical values which can be compared to past or future screenings taken of the same patient (see #4). The definitions of the abbreviations can be found here DPI, EC, AE, RBV.
7. Information box. Special Note: If the HRV Tachogram has dramatic highs and lows or the HR Variability box has yellow dots scattered random in the box, then look at the first line of the second paragraph. It may say “An abnormal heart beat was detected during the course of this examination” (see HRV Erratic Readings).
8. Click “Next” to continue to the next report or “Retest” to retest the patient.
1. Name of Patient and Gender is displayed.
2. Displays the average Heart Beat (Heart Rate (HR) or Beats Per Minute (BPM)) during the three minute screening. The Heart Beat measurement is an average of all the Heart Beats collected during the three minute screening. The Highest and Lowest Heart Beats may only happen once during the test. Therefore, the average may not necessarily coordinate with the Highest and Lowest Heart Beat.
3. These displays show the Highest Heart Beat and the Lowest Heart Beat collected during the three minute test.
4. The Artifact Beat displays any abnormal or erratic readings. If four beats or less are detected, than the test results are acceptable. If five or more Artifact Beats are detected, see HRV Erratic Readings or High Artifact Beat.
5. The current date and time of the test. The drop down menu may be used to compare different test results for that patient.
6. An overall Stress Score is given in reference to the Physical and Mental Stresses and how they relate to the patient’s body’s ability to handle or deal with the internal and external stresses placed upon it. A score of 50 or less is ideal. One’s Stress Score is directly related to their ANS and the relationship or disparity between the Physical/Mental Stresses and one’s Stress Resistance.
7. This button will print a one page report of the information found on Report 1 and Report 2. It prints to the default printer identified by the computer.
8. HRV (Heart Rate Variability) Tachogram: A linear record displaying the HRV information collected during a three minute period of time. The wider the spread between the upper and lower red line, the greater the adaptability of the heart (see HRV Overview).
9. Power Spectral Density displays a linear graph of the Autonomic Nervous System (ANS) frequencies collected (Very Low Frequency (VLF), Low Frequency (LF), and High Frequency (HF)).
10. A graphical representation of the ANS frequencies and how they compare to the ideal frequency levels, which is the range between the top and bottom of the “I”. Total Power (TP) is the combination of the VLF, LF, and HF (see Frequency Domain Chart).
11. A graphical representation of the two main parts of the ANS. The Sympathetic Nervous System (SNS) and the Parasympathetic Nervous System (PNS) (see Sinoatrial Node (SA Node)). The SNS is commonly referred as the “fight or flight” part of the ANS and the PNS is commonly referred as the “rest and digest” part. The ideal reading is to have both bars as balanced or equal as possible. The American Heart Association states, “The autonomic nervous system (ANS) is the regulatory branch of the central nervous system, that helps people adapt to changes in their environment. It adjusts or modifies some functions in response to stress. The ANS helps regulate blood vessel size and blood pressure, and the heart’s electrical activity and ability to contract”.
12. A graphical representation of how the patient’s stress levels and resistance are on a statistical scale of ranges (The numerical values can be found on the “Trend 2” report). The ideal position for the Physical and Mental Stress bars is as far to the left or “low” stress levels. The Stress Resistance ideal is as far to the right as possible or “High-Very High”. At a minimum, the Resistance is best at or more than the Physical or Mental Stresses. The Stress Resistance represents how well the patient’s body is able to handle the internal and external stresses placed upon it.
13. Click the “Back” to go to the previous page or “Next” to go to the next report.
Chapter 8—Trend 1 & 2

1. Name of Patient and Gender is displayed.
2. Category Headings.
3. Each column represents a different screening date and/or time with the corresponding values for category on the day.
4. Click on arrows to advance pages.
5. Click “Back” to go to the previous page or “Next” to go to the next page.

OR

Click “Back” to go to the previous page, “Print” to print a one page report on the “Trends” to the default printer of the computer, or “Restart” to go back to the Start Menu of the Max Pulse.