DATREND
Systems Inc.

vPad –TMA™

WebTMA Interface App
for vPad Safety Analyzers

Operating Manual

MN-130a

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Operating Manual

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vPad-TMA OPERATORS MANUAL

Chapter

1

1   Overview

vPad-TMA™ is a software application (App) which may be installed on the vPad™ system and used in conjunction with the vPad electrical safety analyzer tablets, and which may be used to automate preventative maintenance (PM) inspections, performance testing and other types of service performed on medical equipment, when used in conjunction with the WebTMA CMMS system. vPad-TMA is one component of a suite of Apps that enables a bidirectional data interface between the vPad platform and Computerized Maintenance Management Software (CMMS) systems.

1.1   CMMS and Checklists

A CMMS program is a software application which is used for managing equipment inventory, service activities and technical personnel. WebTMA, EQ2 HEMS, Four Rivers® TMS, Connectiv, AIMS®, MediMizer and Mainspring are examples of enterprise-level CMMS which are specifically designed for use in management of medical devices and other equipment in a clinical engineering setting.

CMMS systems enable automation of equipment inspection and maintenance tasks through computer-generated **Checklists** (or Procedures/Tasks). A Checklist may include inspection check points and tests which are specific to a type of device, and which are performed in a specific order according to device or manufacturer requirements.

Some CMMS systems can export their Checklist procedures to a legacy biomedical testing device which is known as the "**medTester**". The vPad-mT App enables medTester Checklists and equipment information provided by the CMMS to be used with the vPad system, enabling vPad safety analyzers to emulate behaviour and testing features of the medTester in executing a maintenance Checklist.

As programs progress and become Internet compatible, some CMMS systems have developed Restful API interfaces that allow the program to send and receive data via the Internet, reducing the reliance on hardwired or near field wireless connectivity.

1.2   vPad Automation Suite

vPad-mT is one component of a suite of Apps for CMMS-driven equipment maintenance and inspection. The Apps work together to provide a "closed loop" automation solution which starts with CMMS preventive maintenance schedules and/or work orders, proceeds through testing and inspection performed with the vPad platform, and ends with the return of vPad test results (reports) to the CMMS; which then enables work orders to be closed. The vPad automation solution is "plug-and-play", requiring little if any changes to a CMMS currently working with a legacy medTester or possibly with other vintage test equipment.

Apps comprising the vPad automation suite are:

CMX

CMX™ is a software application for Microsoft® Windows® which is used as a bridge between some CMMS programs and Datrend products such as vPad-ES and vPad-623. CMX verifies medTester export files and equipment information generated by the CMMS, so that the CMMS files contain no data errors that could cause problems when used on the vPad platform. CMX is also used to transfer medTester export files ("**MTEXPORT**" files) and equipment information to the Android tablet via USB flash drive or Bluetooth.

More information on CMX may be found in **MN-083 6100-048 CMX Operator's Manual**. Note, this and other operator manuals for the vPad automation suite are provided on the Android tablet, and may be viewed with the **Datrend Docs App** which is (normally) on the Home screen of the tablet.

Note that CMX is not required for use with vPad-TMA.

vPad-mT

The purpose of vPad-mT is to enable the user to browse or search medTester Checklists and equipment ID's which have been provided to the Android tablet through the CMX software, or via CMMS specific tools such as vPad-TMA, normally as part of a scheduled PM program. When a device ID or a Checklist is selected, vPad-mT converts the Checklist from medTester to vPad format and then passes the Checklist to the vPad-Check App for execution. From a user's point of view, the automatic transition from vPad-mT to vPad-Check is seamless so that the two Apps appear to work as a single program.

vPad-Check

With vPad-Check™, the user will perform the medTester Checklist which has been prepared by vPad-mT.

As is done with a medTester, the user will step through the maintenance procedure on the vPad one step at a time, pausing to read instructions, inspect items, and enter data as required by the procedure. Electrical safety tests and device-specific performance tests may also be executed during the procedure. At the end of the Checklist, a Test Record is saved and an inspection label may be optionally printed and applied to the equipment under service. Execution then returns automatically to the main menu of vPad-mT, enabling the user to select another device ID or Checklist.

More information on this App may be found in **MN-084 6100-049 vPad-Check Operator's Manual** on the tablet.

Note that vPad-Check is not in control of the contents of the Checklist when running from vPad-mT. The Checklists are provided by the CMMS vendor, and the Autosequences are a component of vPad-mT.

vPad-AS

One or more steps of a medTester Checklist may require electrical safety testing, and if so, such testing is handled by the vPad-AS™ or vPad-NFPA™ App which is called automatically when needed, by vPad-Check.

vPad-NFPA

For compatibility with CMMS and medTesters currently in use, vPad-AS has pre-defined AutoSequence setups that match the factory-default safety tests "A1" through "A17" of the legacy medTester. If necessary, the settings of a vPad safety test can be temporarily modified at Checklist runtime. Alternatively, any required changes to the factory default tests "A1" to "A17" can be made with the test editor of the vPad-AS App and then saved by that App for later use. vPad-AS followes the requirements of the IEC60601 Standard for electrical safety testing of medical devices. More information on this App may be found in **MN-079 6100-045 vPad-AS Operator's Manual** on the tablet. vPad-NFPA provides preset safety sequences similar to vPad-AS, following the requirements of the NFPA Standard.

vPad-TMA

vPad-TMA™ communicates with the WebTMA CMMS directly to get the necessary files to create the PM schedules and to update workorders and equipment information. Communication is accomplished via an Internet connection to the TMA database.

Chapter

2

2   Installation

The vPad-TMA App is normally pre-installed on the vPad tablet, but the icon for the App may not have been placed on the Home screen [⌂] .

Go to the Apps screen by pressing the Apps icon [⊞] in the upper right corner of the Home screen. Find the vPad-TMA icon (▦)and press and hold the icon for a few seconds. You will then be able drag and drop the icon onto the Home screen.

In order to use the App it will need to be activated. When the App is started for the first time, the activation screen will be presented. Enter the activation code provided by your dealer to allow the App to run.

In the event that vPad-TMA is not on the tablet, contact your dealer and an installation package for the app will be provided via download.

Vpad-TMA also has several other important Setup parameters and tablet Settings to initialize before using for the first time. First, go to the tablet Settings, turn on the WiFi and connect to a suitable network with Internet access. Second, start the vPad-TMA app and open the Settings dialog box. Enter the Host URL, User Name, Password and Client ID for the TMA database with which you wish to work (contact your TMA dealer for assistance). If you are initializing more than one tablet, you can use the Import/Export feature in Settings. Finally, get all the data tables and set the filters. All of these steps must be completed before you can access information from or send information to your TMA database.

In order to use vPad-TMA; vPad-mT, vPad-Check and vPad-AS(or NFPA) Apps must also be installed and activated.

Note: After setting up the connection to WebTMA and downloading the first set of files, vPad-TMA is normally entered from vPad-mT. Start the vPad-mT app and run tests, as desired. Press the 'Launch vPad-TMA' button on the vPad-mT screen to enter vPad-TMA and transfer files.

Chapter

3

3   Operation

This chapter covers operation of the vPad-TMA App and Checklist execution.
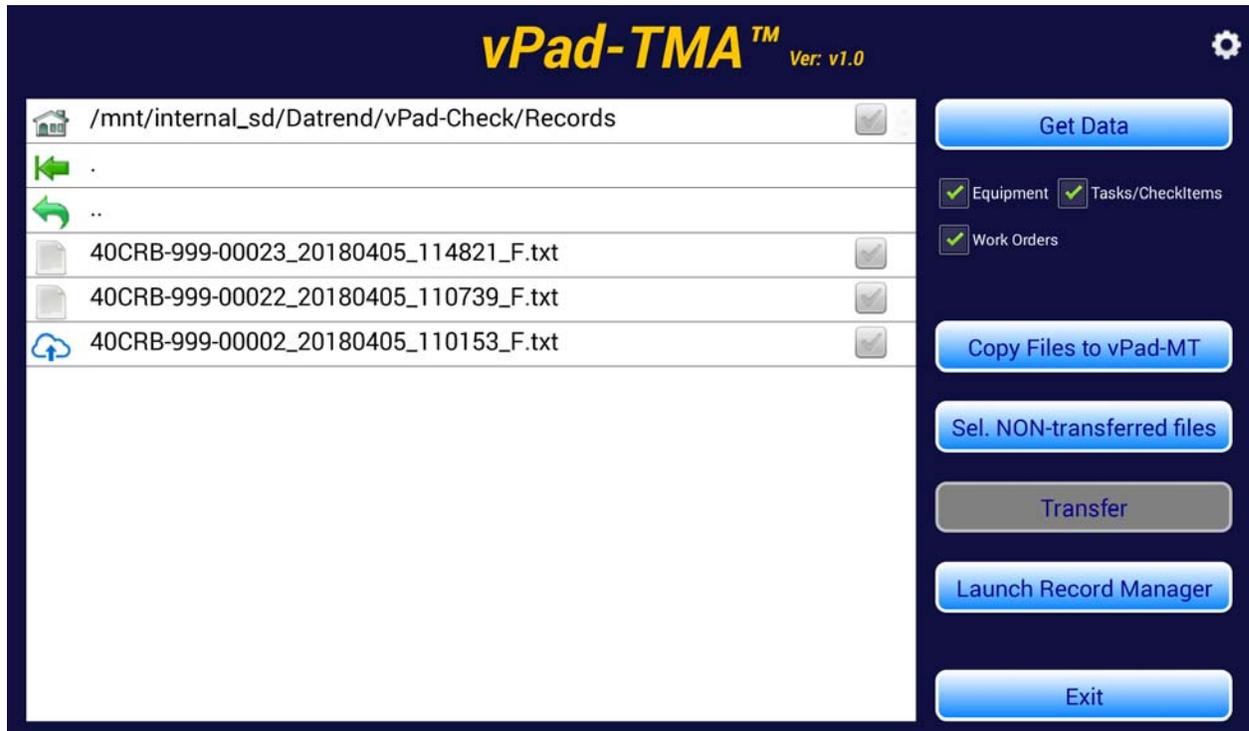
3.1 Startup

Press the vPad-TMA icon ▦ to start the App. A splash screen will display the product name and the software version.

Figure 1 *- vPad-TMA startup screen.*

3.2 Main Menu

Following a successful start-up, vPad-TMA will display the main menu of the App:

Figure 2 *- Main menu of vPad-TMA, showing Test Records.*

Test Reports from previously completed tests performed using vPad-mT will appear in the scrollable list (ListView) on the screen, as shown above. Note that the test reports are stored in the vPad-Check/Records folder since the Procedures are run\executed by the vPad-Check app internally.

To return to the Android Home screen, press the [icon] icon on the navigation bar. Note this will only pause the App temporarily and will not actually terminate or close vPad-TMA. To fully close the App, press the **"Exit"** button.

3.3 Setup for communication with TMA

The Settings icon, ⚙ , is located in the upper right of the screen, on the title bar. Touch on the Settings icon to display the Settings Menu, as indicated below. In order to communicate with the correct database, the **Host URL**, **User Name**, **Password** and the **Client ID** for the end user's WebTMA program must be entered. Contact your TMA representative for assistance if you need help with this information.
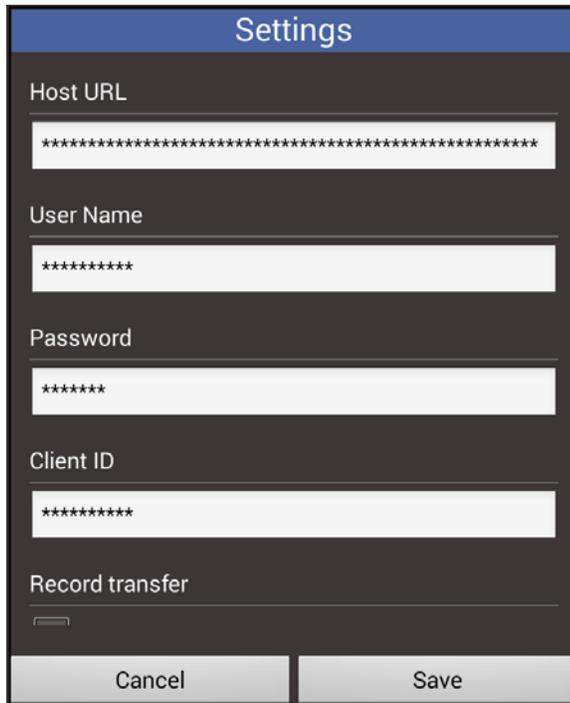
**Figure 3** - *Settings menu of vPad-TMA.*

To enter the URL or other connection setting to the WebTMA database for your organization, touch and hold on one of the four text boxes containing the '*' strings. A password is required to access the text entry screen. The following password entry screen will be displayed.

Figure 4

The default password is 1234, and will be displayed if it has not been changed by the user. Once changed, it will be displayed as '********'.

Enter the URL for the database, the User Name, Password and ClientID. See the example below:
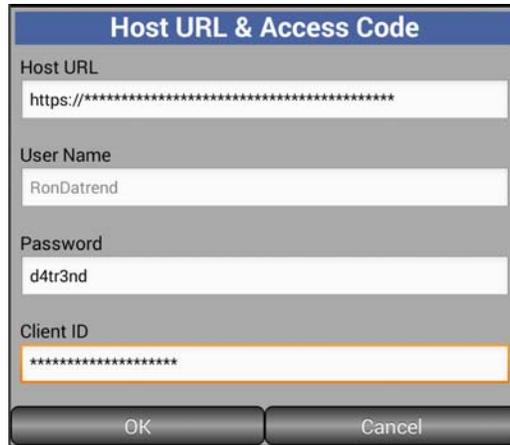
Figure 5

Once these have been set, you can communicate with the data set with which you will be working.

If you wish to delete the Test Records from the tablet after they have been sent to TMA, check the **Record Transfer/Delete record after transfer** box, as shown in Figure 7 below. If you select **Do not delete**, the transferred records will be marked as transferred by the 'cloud' icon, ,to the left of the filename and will remain in the list. Alternately, you may choose to archive the records by selecting the **Archive record after transfer** option. This will allow the records to be moved to an alternate location, including an external SD card, if installed.

The files created during the Internet communication with TMA are stored in the vPad-TMA folder. To be used by vPad-mT, these files are copied to the mT folder using the **Copy Files to vPad-mT** button. With **Auto Copy** set to **ON** (in Settings, Figure 7), these files will be saved to the vPad-TMA folder **and** copied to the vPad-mT folder at the same time.

TMA has two parameters that are used to provide a device description - the description associated with the Device Type, and the Make Name in the Make\Model selection. The user may one or the other as the source of the Description for the device. Note that Make Name expects extensive use of the Make\Model association.

If you are setting up more than one tablet, the Host URL and other security parameters can be Exported to a file called TMA_Preferences.xml, which can be found in the Datrend\Database folder. Scroll the Settings dialog box up until the Import/Export selections are in view. To 'copy' the URL, etc. to another tablet, Export the parameters to the preferences file and copy this file to the second tablet using Bluetooth, Dropbox or a USB memory stick and paste the file into the Datrend\Database folder of the second tablet. Use the vPad-TMA\Settings feature on the second tablet to Import the settings. The new settings will not change on the display until you exit (Save) out of the Settings dialog and re-enter. Using this process reduces the possibility of mistyping long URL inputs. The URL and other settings are encrypted within the

XML file for security reasons. Change the User Name and Password as necessary on the second tablet.
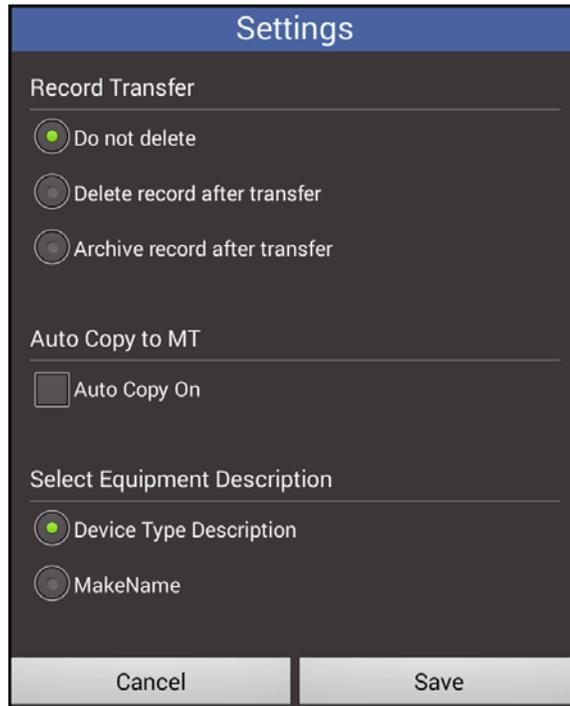
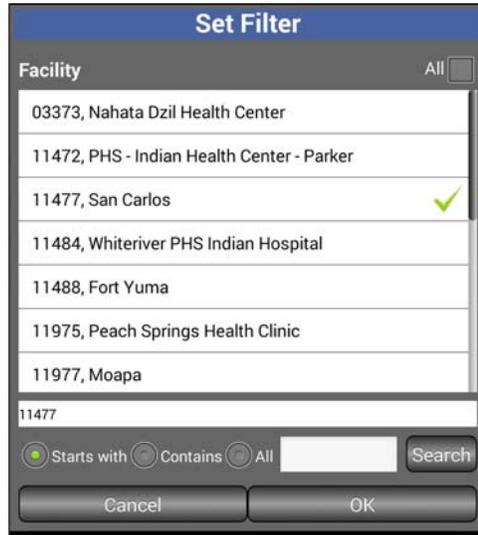**Figure 6** - *Settings 2*
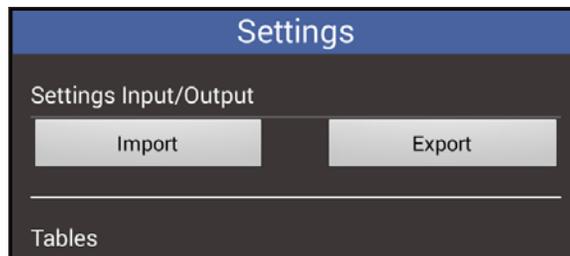
Figure 7 - *Settings 2*

Figure 8 *- Tables.*

When creating a new device or updating information for an existing device, it is important to use data that will be recognized as valid data in WebTMA. To ensure consistent information, tables of valid data are uploaded to the tablet and provided on the **Equipment Information** screen or the associated Tables. Figure 8 shows the tables that are available from WebTMA. It is possible to **Get All** or to select individual tables that may have changed. Check the table(s) of interest and press the **Get Tables** button to retrieve the tables and make them accessible on the tablet.

Figure 9 *- Filters*

TMA databases include parameters that can be used as filters when requesting information such as the Equipment list or the open Work Orders. These filter parameters are: Facility and Work Order Type. To create a filter, touch in the large white text box associated with the parameter and select the Facility or Work Order Type required, as shown in Figure 10. You can scroll down the list to find the facility you want or you can Search for facility 'Starting with' or Containing' particular letters. The search tool is case insensitive. Do not select more than one at this time, as the filter capability does not support more than one value. Multiple values are expected to be supported in a future release by WebTMA.

Figure 10 *- Set Filter*

When selected, a green checkmark will be displayed to the right of the value. To remove an item, scroll or search till the value is displayed on the screen and touch the checkmark to remove it.

When all **Settings** have been created/modified, touch the **Save** button to save the settings and exit to the **Main Menu**.

3.4 Getting PM Schedules and Equipment Inventories

Work Orders and the Equipment Inventory lists are created in TMA and must be transferred to the vPad tablet and formatted in a way that vPad-mT can process them. Requests for data are performed over the Internet. The **Get** requests (or Queries) are created by touching one or more of the three checkboxes shown in the figure below:
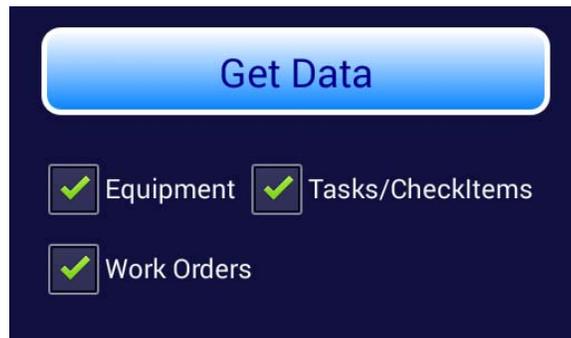
Figure 11 *- Get Data Button*

Two of these lists do not change very frequently; the **Equipment** List, and the **Tasks/CheckItems** list. These lists can be updated on the tablet, as required or on the advice of the database administrator, when new equipment or procedures have been added. The file that will change on a routine basis (daily; weekly; monthly), is the Work Order file. This Work Order file will contain all the work orders of the type specified in the filter, which are currently outstanding. At a minimum, this file should be updated on the tablet routinely.

Note: Only the files with a green checkmark will be retrieved when Get Data is touched.

Note: The Equipment List (CSV) can be a very large list, and may take quite a while to download (typically several minutes, depending on the filter parameters set). The other lists are usually fair quick, but may take a long time, depending on the TMA database response time, which can vary.

First, make sure that only the facilities of interest are selected in Settings.

Note: If a network connection is not active an error message will be displayed.

When the GET DATA button is touched, the vPad-TMA app will initiate communication with the TMA database over the Internet. Vpad-TMA will request specific type(s) of data based on the checkmarks. While waiting for a response, a progress 'spinner' will be displayed.

Figure 12: *Initiating Communications*

Once data has been transferred from TMA to the tablet or if an error has occurred, a 'toast' message will appear at the bottom of the screen.

Figure 13: *Toast message*

Data is downloaded to the vPad-TMA folder. When all necessary downloads have been completed, the files need to be placed in the vPad-mT folder. This can be accomplished by touching the **Copy Files to vPad-mT** button, or can be done automatically if the **Auto Copy** setting has been previously set to **ON** in the **Settings** panel.
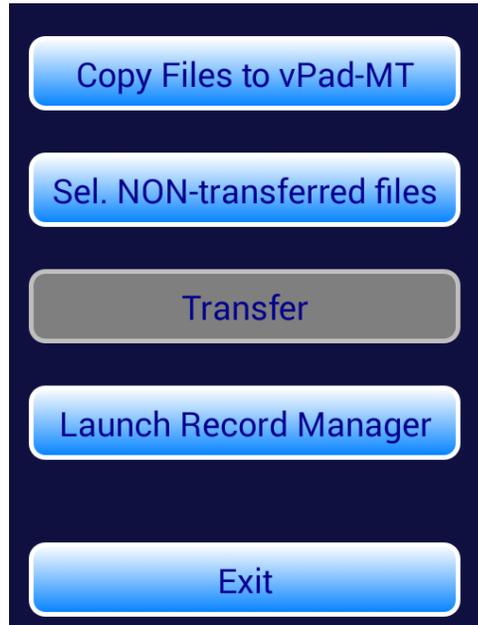
Figure 14 - *Main menu Control Buttons*

You are now ready to run tests using vPad-mT.

3.5 Sending Test Reports to TMA

Test Reports created by vPad-mT are text files, and are saved in the vPad-Check/Reports folder. Reports which have been created, but not sent to TMA will have a text page icon, [icon] , in the left column. When a report has been sent to TMA, the icon will change to [icon] , to indicate that it has been transferred 'to the cloud'. Optionally, transferred files may be deleted or archived after transfer, to reduce the possibility of sending again, and to keep the number of reports in the vPad-Check/Reports folder to a manageable number. If it is desirable to keep a longer history of test reports on the tablet, another good option is provided in vPad-Record Manager; which can archive test reports to an external SD-card memory.

Vpad-TMA will transfer test reports to TMA via the Internet. Files to be transferred can be selected by touching on the filename, or on the checkbox icon to the right of the filename. Multiple files can be selected for transfer. To select *all* report files which have not been previously sent, touch the **Sel. Non-transferred Files** button.

When all files to be transferred have been selected, as indicated by the green checkmark(s) to the right of the filename, touch the Transfer button. Files will be converted to a **JSON** format and sent to TMA. Files received by TMA may be reviewed in the Transactions\Work Order\Records, or

Organization\Biomed\Records, or other areas, as appropriate.

Note: When running tests using vPad-mT, there is a button labelled **Launch vPad-TMA**. Touching this button will launch vPad-TMA, automatically select all files which have not been previously transferred, and prepare for the transfer of the files to TMA. To complete the transfer, touch the **Transfer** button.

3.6 Notes on vPad-Check and vPad-mT Settings

The tasks that will be included in a complete test and some of the options that will be presented during a test will be influenced by settings that are made in other parts of the vPad system. While vPad-TMA is the direct web interface to WebTMA for data transfer, the actual work orders are organized and presented for selection in vPad-mT, which then uses vPad-Check to actually run the test and create the test report.

Important Settings:

vPad-mT:	Safety Test:	Be sure this is set to the Standard that you are using or intending to use, such as vPad-NFPA. If it is set to a Standard that you do not have the app for (eg. Vpad-AS or vPad-NFPA) you will get a message that 'this app is not activated'.
Vpad-Check:	Safety Test:	Same as above for vPad-mT. Seems redundant, but required since Check can run on its own.
	Test Record:	'Show results at end of test': the display of the overall test results before going to the 'Create Report' screen can be disabled.
		'Disable signature/date line': this line can be excluded from the test report if the report is to be stored only electronically and will not be printed for distribution (potentially requiring an actual signature)

Chapter

4

4 Upgrades and Maintenance

Software Applications (Apps) may be upgraded from time-to-time to provide enhanced features or improvements. Contact Datrend or your local dealer for information on these upgrades.

In some cases, the changes made to an App may be to correct operational issues that have come to the attention of DSI. These shall generally be referred to as maintenance upgrades. In other cases, the changes may be to improve performance or add features which would enhance the overall functionality of the App. The decision to apply a charge to any upgrade shall be solely at the discretion of DSI.

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