InCTRL Setup: Recommended Steps

Step 1: Subscribe

A. Contact CTRL Systems to order/subscribe to InCTRL – You will be given usernames and passwords (i.e. 5 total usernames for InCTRL Basic).
  - One of the usernames will be designated as the "master user".
  - CTRL will provide a y-splitter and custom-built connector cable to connect the UL101 to your Android Phone. (Note: You will need to designate your Android phone device to CTRL. If the phone has not been tested, CTRL will provide the custom-built cable that is most popular and provide test procedures to ensure proper recordings)

B. Log in to InCTRL Cloud from any computer, tablet, or phone that has access to the Internet at https://inctrl.ctrlsys.com

C. Proceed to **Step 2: InCTRL Cloud Setup** (Page 3) or proceed to #4 of Step 1 (next page).
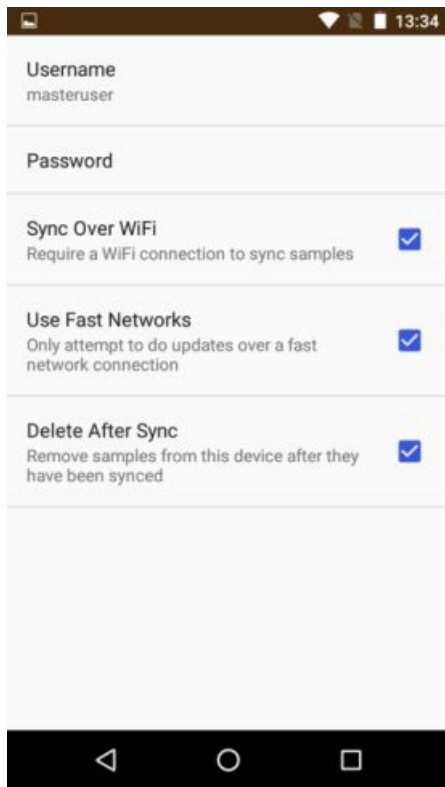
D. Install InCTRL Mobile on your Android Phone
- Open Google Play Store
- Download and install InCTRL Mobile to your device http://bit.ly/inctrlapp
- Sign in and set up InCTRL by clicking menu in top right of screen.
  - ➢ Enter username/password.
  - ➢ Check "Sync over WiFi" if desired. If this option is selected, samples will be uploaded over wifi connection only and will not use cellular data.
  - ➢ Check "Use Fast Networks" recommended – When using cellular data plan, only use 3G, lte or higher.
  - ➢ Check "Delete After Sync" if desired – the samples will be deleted from the phone once they are uploaded to InCTRL Cloud.
- Connect – Click menu / connect to connect to InCTRL with your username/password. If InCTRL Cloud has been set up, InCTRL Mobile will be populated with your locations, routes, and test points. You are ready to begin. Otherwise, proceed to **Step 2: InCTRL Cloud Setup** (Note: Lists are refreshed by swiping from top to bottom of screen)

Step 2: InCTRL Cloud Setup

1. User Profiles – Users are assigned by CTRL with a username and password. One username is designated "master user".
   - Select Admin/Setup > Profile - The username cannot be modified. It is recommended that you change the password. You can also update the email address, physical address, etc.

   - Select Admin/Setup > User Permissions – Only the master user has access to modify the user permissions of all the users of an InCTRL Account. The master user determines if the user can add, edit, delete, and/or upload.

2. Organizational Data
   - Activities – Select Admin/Setup > Activities
     - ➢ Activities are a way to classify the reason a sample recording is being taken for a test point. (i.e. repair, replace, PM, etc.)
     - ➢ The user can define or adjust any set of activities.
     - ➢ "Baseline" is a pre-defined activity that cannot be edited by the user. When a sample is being recorded for a test point for the first time, the activity should be defined as "Baseline." InCTRL Mobile will indicate if the settings are too low or too high for the sample to be used as a good baseline recording.
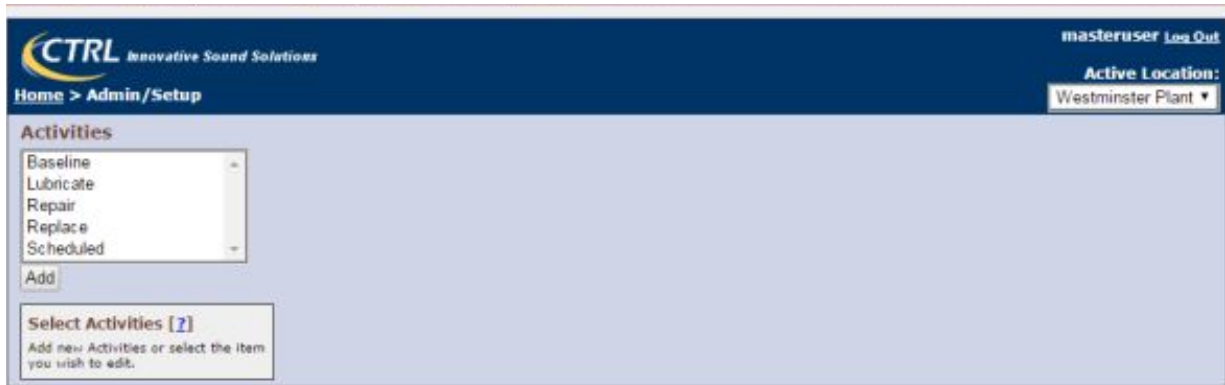
   - Locations – Select Admin/Setup > Locations
     - ➢ Locations are defined by the user and can be used to denote
       1. A physical plant location (i.e. Baltimore)
          A location within a plant (i.e. compressor room)
       2. A client (i.e. ACME Manufacturing) if the user is a service company. *
     - ➢ Users can be assigned access to one or more locations by the master user.

     *If InCTRL is being used by a service company, each of the service company's clients should be assigned as a user. Once the technician records and uploads data, the service company's client will be notified by email if the condition of the equipment under test is abnormal.

- Equipment – Select Identification
  - ➢ Equipment is defined by the user and denotes a physical asset within a plant such as a motor, pump, gearbox, valve, steam trap, or compressor.
  - ➢ Equipment is assigned to one location.
  - ➢ Users who are assigned to the corresponding location can be identified for required notification if the any of the test points of the equipment indicate abnormal conditions during testing.
  - ➢ The equipment name is only used for reporting purposes and will not be displayed in a list on InCTRL Mobile.

- Test Points – Select Identification
  - ➢ Test points are defined by the user and denote the component of the

equipment to be tested (i.e. in board bearing or out board bearing)

➢ Each test point name should also include the equipment name. For example, test point "12345-IB" is the in-board bearing on motor 12345.

➢ The test point can also be assigned a test interval that will supersede the route test interval if it becomes due first.

➢ Each test point is assigned individual UL101 Detector settings by the user when a baseline is being taken. The settings appear in InCTRL Mobile when the test point is selected for recording.

➢ A photo can be taken with InCTRL Mobile that shows the equipment and placement of the UL101 Detector for testing.

➢ If the test point is a bearing, InCTRL has special algorithms for calculating the health of a bearing based upon the current reading compared to the baseline(s), the amplitude, and the events per second.

➢ The test point is listed in each route and in InCTRL Mobile.
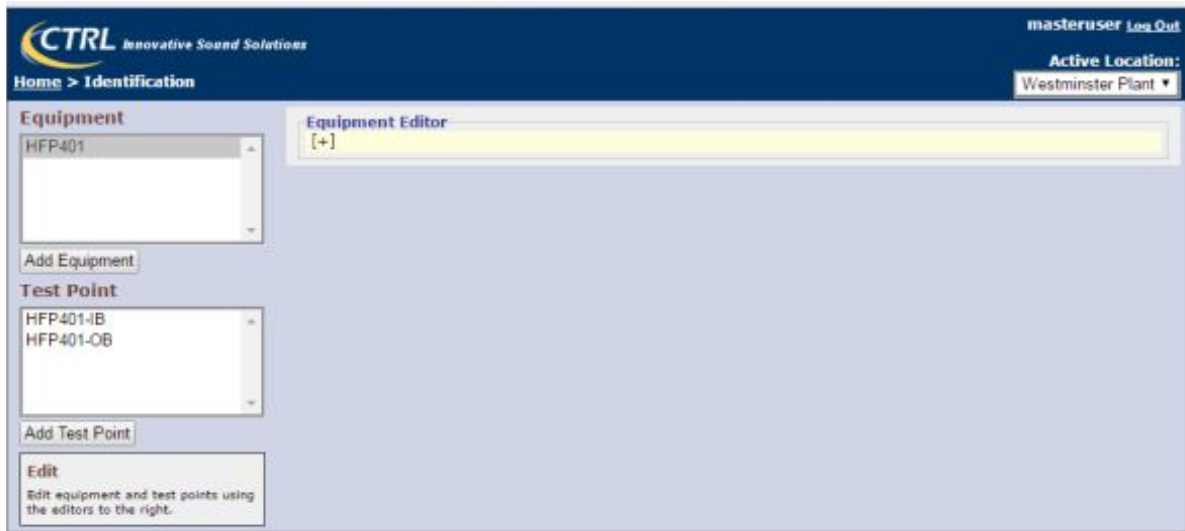
- Routes – Select Admin/Setup > Routes
  - ➢ Test points of equipment are organized into lists with corresponding interval test days.
  - ➢ A route name, description, and interval days for testing is defined by the user.
 - ➢ A test point can be assigned to one or more routes.

Step 3: Recording Baselines

A. Connect UL101 Receiver with solid probe and headset to Android Phone using y-splitter and connector cable.
B. Open InCTRL Mobile App
C. Sign in and connect to InCTRL Cloud using menu box in upper right hand corner.
D. Select location from dropdown list in upper left hand corner.
   - InCTRL Mobile will default to the previous selected location.
   - The route list and test point list will be populated by the user's selection.
E. Select All routes or one particular route from the dropdown list under location.
   - "All" is the default selection referring to all test points will be listed.
   - Once a route is selected, the test point list will be loaded with the test points assigned to the selected route. The listed is ordered by:
     - ➢ Test points that are overdue the longest
     - ➢ Alphabetically

F. Select the test point from the list to record a baseline.
   - Select "Baseline" from the dropdown list of activities.
   - Using the UL101, listen to the component first to determine the best settings and point to contact the housing.
   - Select "Capture Image" to take a picture of the UL101 and test point. One image will be uploaded and stored by InCTRL for each test point.
   - Record a sample by clicking the circle microphone icon in the bottom right (or top right). If the RMS level is too high, adjust the sensitivity of the UL101 down. If too low, adjust up. InCTRL Mobile will indicate if too high or low. Once the RMS value is in a good range for recording a baseline, record for 20 seconds.
   - Stop recording by clicking the circle stop icon in the bottom right, which replaced the record icon.
   - Upload the recording to InCTRL Cloud by clicking the circle save icon that appears over the record icon. If not satisfied with the recording, do not save. Click record again.
   - Repeat 4 more times for a total of 5 baseline recordings per test point.
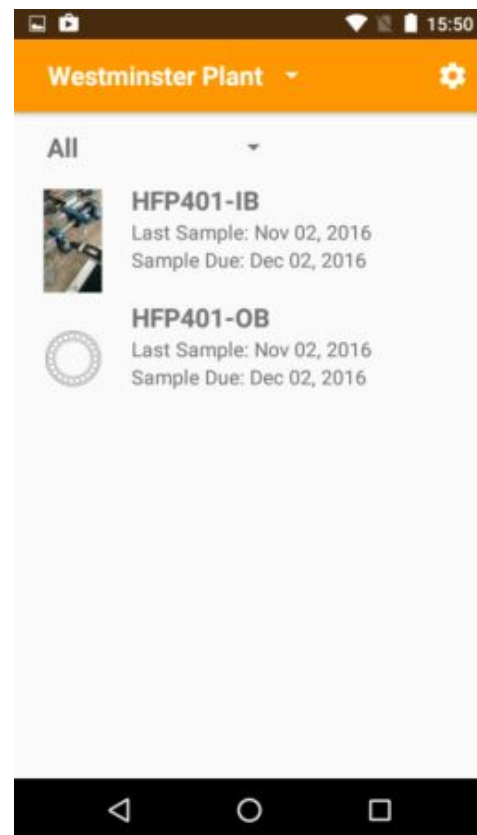
G. Upload – if you do not have a connection to the Internet via WiFi or Data, the recordings and images will be cached on your phone. Once a high speed connection (3G or LTE or WiFi) is available, exit InCTRL Mobile. InCTRL Mobile will check for changes to the cache for the selected location every 15 minutes and upload automatically if the software is not "active".
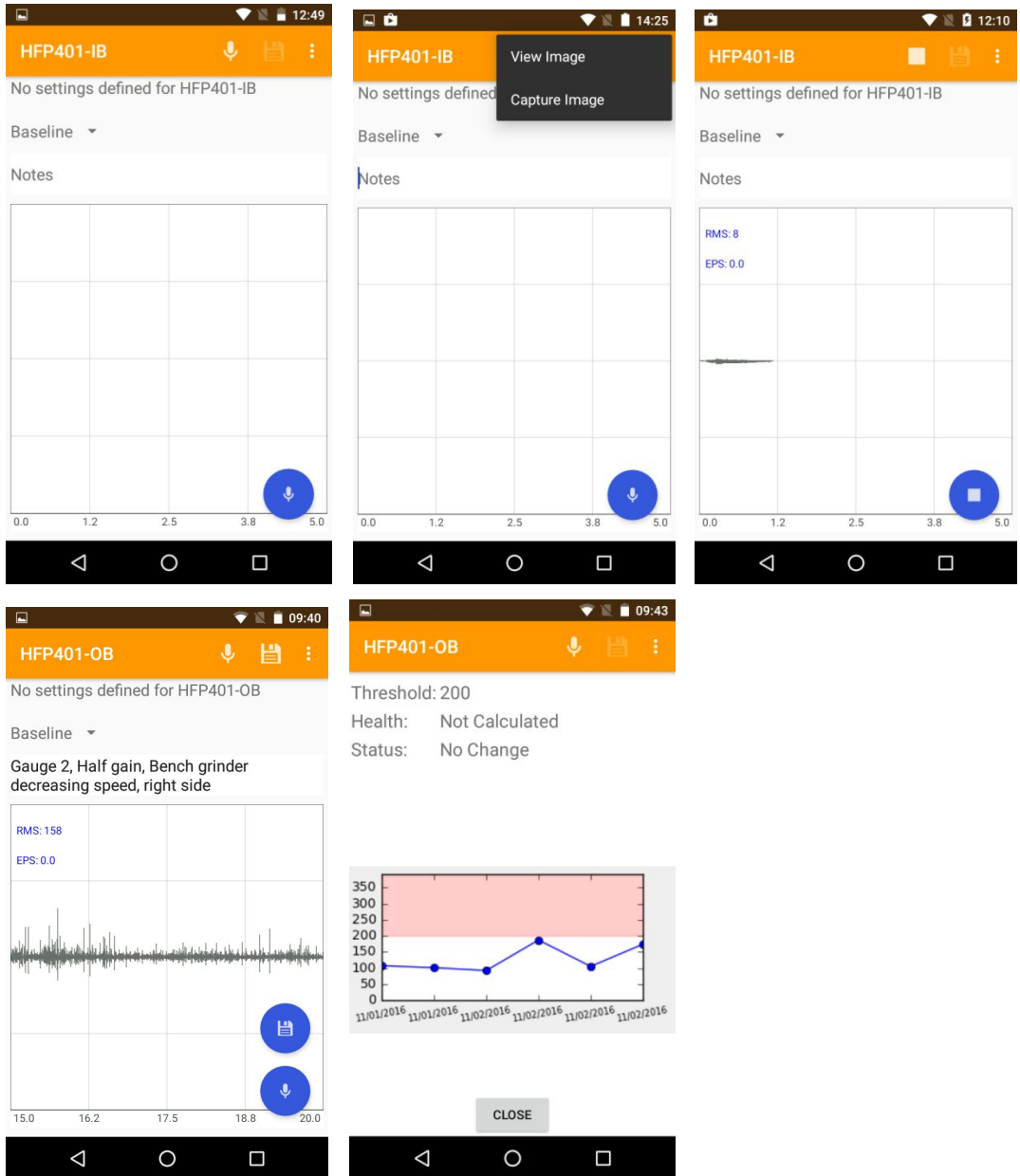
Step 4: Set Threshold

A. Open InCTRL Cloud from your desktop or tablet.
B. Log in securely with your unique username and password.
C. Select the location from the drop down menu in the upper right of the screen.
D. Select "Thresholds" from the home screen.
E. Select Equipment and the test point from the list in the left hand side of the screen for which you want to set a threshold value.
F. If at least 3 samples have not been taken for a baseline, a message will inform you of "Insufficient Test Point History". Return to "Step 3" to record up to 5 baselines.
G. Enter a threshold value to be used to determine the bearing health assessment and notification levels of the test point. You can use the "recommended threshold" or determine your own, depending upon the criticality of the equipment.
    - Bearing Health Assessment – the threshold value is one variable used by CTRL's proprietary algorithms to determine if a bearing is "normal", "under lubricated", "questionable", or "suspect."
    - Notify User – A user is notified by email when the RMS value exceeds the threshold value. This allows the user to take action by issuing a work order to lubricate, repair, or replace. It also helps management to focus on the assets that are identified as having potential problems. **Ignoring this notification may lead to early wear causing decreased bearing life, lubrication problems, quality control issues, or even catastrophic failure.**
H. Click the "Set Threshold" button.

Step 5: Recording Samples Routinely

A. Connect UL101 Receiver with solid probe and headset to Android Phone using y-splitter and connector cable.
B. Open InCTRL Mobile App
C. Sign in and connect to InCTRL Cloud using menu box in upper right hand corner.
D. Select location from dropdown list in upper left hand corner.
   - InCTRL Mobile will default to the previous selected location.
   - The route list and test point list will be populated by the user's selection.
E. Select All routes or one particular route from the dropdown list under location.
   - "All" is the default selection referring to all test points will be listed.
   - Once a route is selected, the test point list will be loaded with the test points assigned to the selected route. The listed is ordered by:
     ➢ Test points that are overdue the longest
     ➢ Alphabetically
F. Select the test point from the list to record a sample.
   - Select activity from the dropdown list of activities to define the reason this sample recording is being taken (i.e. "scheduled").
   - Adjust the settings of the UL101 to the settings stated.
   - Record a sample by clicking the circle microphone icon in the bottom right (or top right). Record for 20 seconds.
   - Stop recording by clicking the circle stop icon in the bottom right, which replaced the record icon.
   - Upload the recording to InCTRL Cloud by clicking the circle save icon that appears over the record icon. If not satisfied with the recording, do not save. Click record again.
G. Upload – if you do not have a connection to the Internet via WiFi or Data, the recordings and images will be cached on your phone. Once a high speed connection (3G or LTE or WiFi) is available, exit InCTRL Mobile. InCTRL Mobile will check for changes to the cache for the selected location every 15 minutes and upload automatically if the software is not "active".
H. Quick Analysis
   - If you are connected to the Internet and the sample uploads properly, InCTRL Cloud will display the RMS trending graph on your Mobile Screen. You will see if the sample just recorded has average amplitude (RMS value) that is normal or if it exceeds the previously set threshold value. If the current sample's RMS value exceeds the threshold value, an email is automatically sent by InCTRL to notify the users.
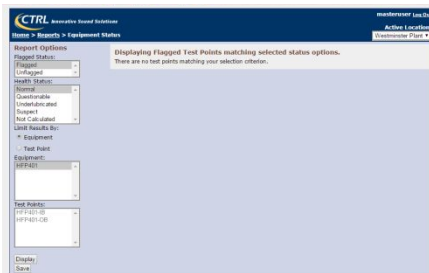
Step 6: Reporting & Analysis

A. Select "Reports" from the home screen of InCTRL Cloud.

- Equipment Status – Displays a list of test points by equipment for this location by user-defined options.
    - ➤ Example 1 - display all flagged test points will display all test points whose last sample has an RMS value that exceeds the threshold value.
    - ➤ Example 2 – display all test points that whose last sample has been marked as "under lubricated", "questionable", or "suspect."
- Equipment Samples – display test points with their corresponding status including RMS, Health, and whether or not this was unchanged or resolved (referring to a sample being taken whose RMS level dropped below the threshold) in the date interval specified. The samples' wave form can also be displayed.
- Test Point Activity – display the test points with the graph of trended RMS values with samples taken in the date interval specified.
- Test Point List – display of list of test points. User can specify all test points by location or equipment. User can specify only test points that are due.

B. Save Reports – any report can be saved as a pdf or exported to a *.csv file to share with others in your organization or with your client who does not have user access to InCTRL.