Vision Fitness TF20-TF40-T40 Frame with Classic / Elegant / Touch Console Service Manual

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1.1 SERIAL NUMBER LOCATION - TF20


```
TM432-1US-F
MODEL: TF20
S/N: TM4321207BD000009

MADE IN CHINA
```

1.2 SERIAL NUMBER LOCATION - TF40

TM434-IUS-F
MODEL: TF40
S/N: TM4341207BD000011

MADE IN CHINA

1.3 SERIAL NUMBER LOCATION - T40


```
TM433-1US-F
MODEL: T40
S/N: TM4331207BD000003

MADE IN CHINA
```

1.4 SERIAL NUMBER LOCATION - Touch / Elegant / Classic Console

Touch	Elegant	Classic


```
1000233538        HAPA
TM437-1US         S101-27

1000233538CS1208AA0007
```

```
1000233536        HAPA
TM436-1US         S101-27

1000233536CS1208AA0013
```

```
1000233534        HAPA
TM435-1US         S101-11

1000233534CS1208AA0001
```

CHAPTER 2: Engineering Mode

2.1 ENGINEERING MODE - Classic Console

1) To enter Engineering Mode, press & hold the INCLINE UP "▲" and SPEED DOWN "▼" keys at the same time for 3-5 seconds until Engineering Menu appears on the display.
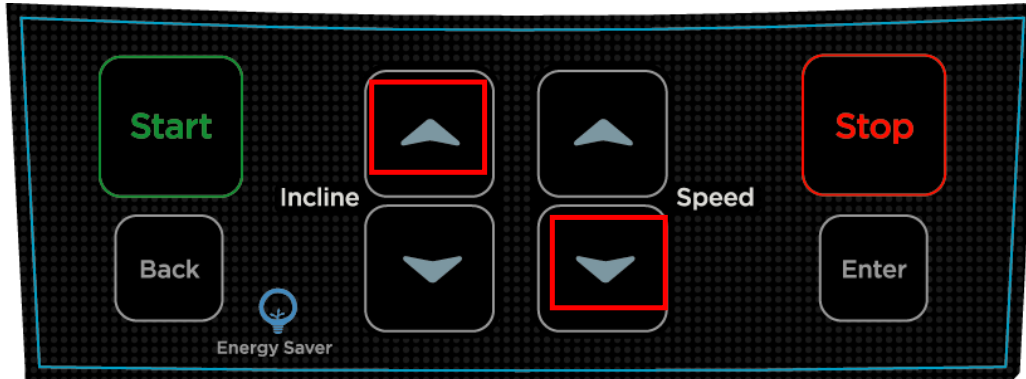
2) Use the INCLINE and SPEED UP and DOWN keys to select a parameter.

3) Press ENTER to enter a parameter setting.

4) Use the INCLINE and SPEED UP and DOWN keys to change the parameter.

5) Press the START key to save the change to the parameter.

6) Press and hold the STOP key to exit Engineering Mode and return to normal operation.

2.2 ENGINEERING MODE OVERVIEW - Classic Console

MODE	FUNCTION	DESCRIPTION
ENG 0	Display Test	Start Key – LCD/LED on Stop Key – LCD/LED off Any Other Key - Will show on the display window. Hold the STOP key for 3 seconds to return to the Engineering Menu.
ENG 1	Hardware Test	Motor, Incline Motor, & Heart Rate Test.
ENG 2	Auto Calibration	If you have a digital MCB, Auto Calibration is not necessary. Press the START key, the words "NO FUNCTION" will scroll on the screen.
ENG 3	Switch Function	- Use the INCLINE or SPEED UP and DOWN keys to switch Energy Save Mode (ESM) **off** or **on** (shown in the SPEED window). - Use the START key to select unit (Miles or Kilometers) (shown in the INCLINE window). Press the ENTER key to enter the Language setting: **-** Use the INCLINE or SPEED UP and DOWN keys to select the languages (English, German, Dutch, French will scroll on the middle window).
ENG 4	Information	Accumulated Time, Distance, and Aged Press and hold the START key for 5 seconds to clear all data. Remarks: Unit of Time is Hour. Unit of Distance is KM or Mile. Unit of Aged is Minute. (factory only setting)
ENG 5	Set Machine	Set the Machine Type – Options include TF20, T40, and TF40. Set the Distance Type – Options are Mile or Kilometer. Press ENTER to scroll to the other settings.
SECOND LEVEL ENG 8	Software Version	To Get to ENG 8 - Enter into ENG 3, then press and hold the SPEED DOWN and INCLINE UP key at the same time for 3-5 seconds. Press ENTER at P0 - Software version. Press ENTER at P1 - Select speed up rate (normal or quick). Press ENTER at P3 - Hold the START key to clear all data.

※ Press the "START" key to save any changes.

2.3 ENGINEERING MODE - Elegant Console

1) To enter Engineering Mode, press & hold the INCLINE UP "▲" and SPEED DOWN "▼" keys at the same time for 3-5 seconds until Engineering Menu appears on the display.

2) The Engineering Mode parameter list will be displayed on the screen.

MODEL TYPE TF20

SETTINGS

Accumulated Data
Accumulated Distance 0.00 MILES
Accumulated Time 0.0 Hours

TEST

Main Board Info
UI Software Version S101-14.00
IO Version 16
OS Version 3

DEFAULT

ERROR LOG

MCB Information
MCB Type Unknown
MCB Software Version 0 - 0

REGION

SERVICE LOG

Restore

Reset Data

Press 'Stop' to Exit

3) Press the ATM style key on either side of the screen to enter the appropriate screen settings.

4) Set all the information using the ATM style keys.

5) Press and hold the "STOP" key to exit Engineering Mode.

2.4 ENGINEERING MODE OVERVIEW - Elegant Console

2.4.1 ENGINEERING MODE (Elegant Console) – About

The Engineering Mode displays the basic parameters of the console, such as Model Type, Software Version, MCB Version, etc…

Use the ATM style keys located on both sides of the screen to enter into the parameter.

NOTE：Navigation of the other Engineering Mode screens is the same, instructions are not repeated.

Arrows point directly to the corresponding ATM style key

Engineer Mode - About	Function & Default	Descriptions	Modified
Accumulated Data	Accumulated Distance	Total distance displayed in native units (miles or kilometers), not editable	Cannot be modified
	Accumulated Time	Total time, not editable	Cannot be modified
Main Board Information	UI Software Version	Application version, not editable	Cannot be modified
	IO Version	Sub UCB software version, not editable	Cannot be modified
	OS Version	Operation System Version, not editable	Cannot be modified
MCB Information	MCB Type	The frame MCB type, for example: 2.75HP digital MCB	Cannot be modified
	MCB Software Version	MCB Software Version	Cannot be modified

2.4.2 ENGINEERING MODE (Elegant Console) - Settings Tab

The Settings Tab includes options for setting Machine Type, Model Type, Energy Saver, First Boot, and Program Speed.
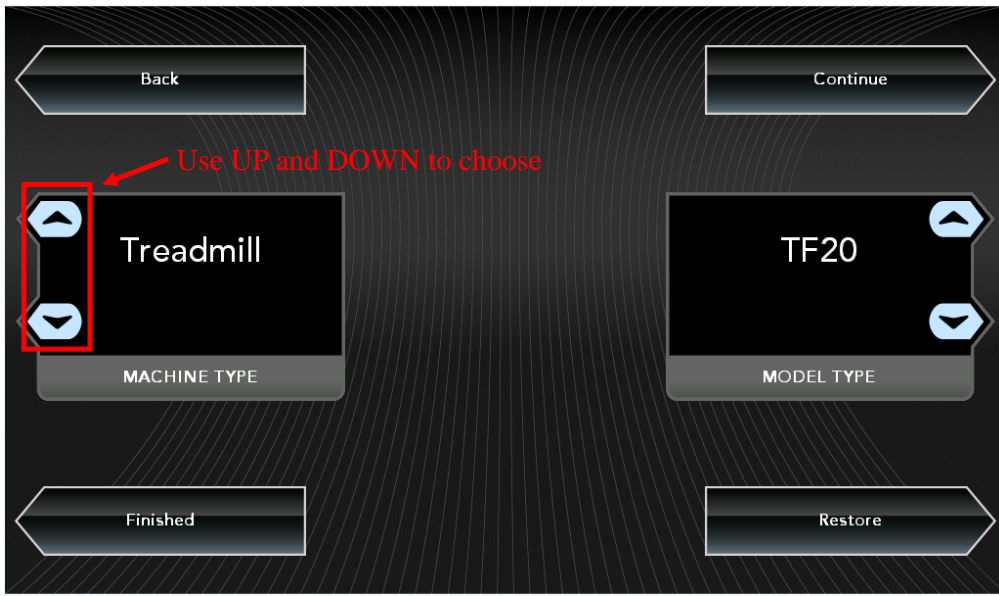

Press the key next to "Continue" to enter the next page of settings.   Set these settings the same way as Machine Type.

NOTE: After changing a setting on any page, select "Finished" to complete the setup, the other items will keep the default settings, press "Restore" to restore to the factory settings.

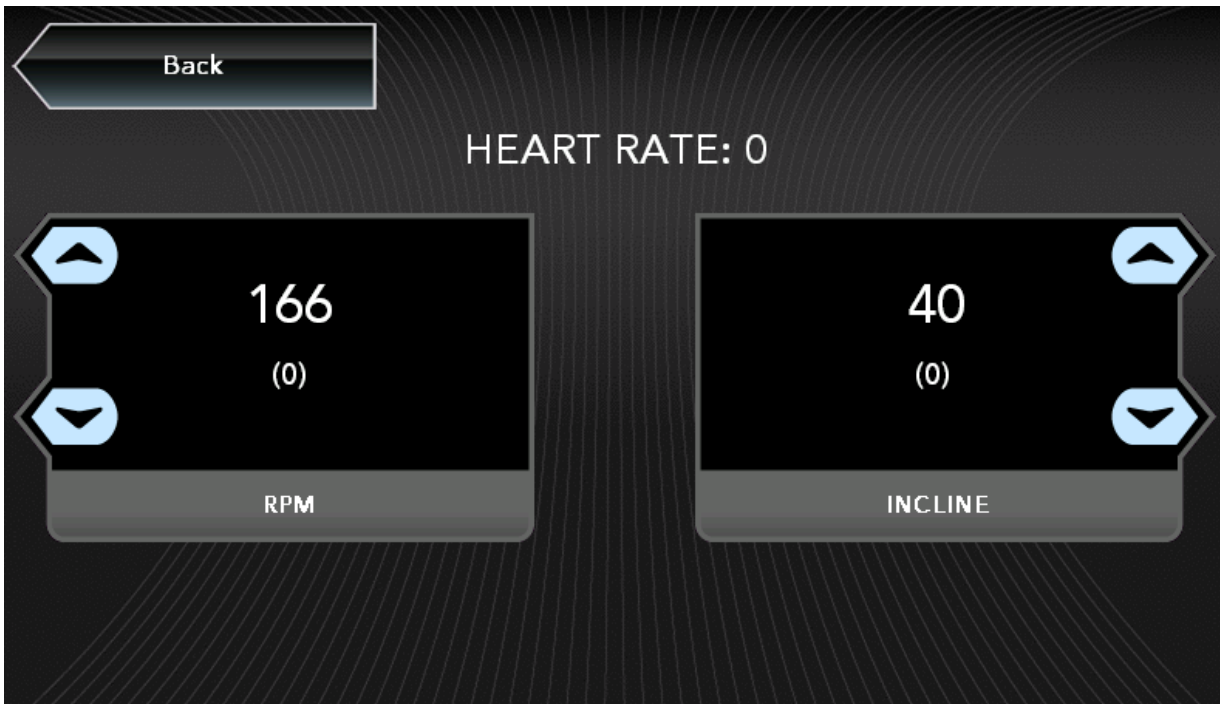### 2.4.3 ENGINEERING MODE (Elegant Console) - Test Tab

The Test Tab includes various tests of the functions of the unit.
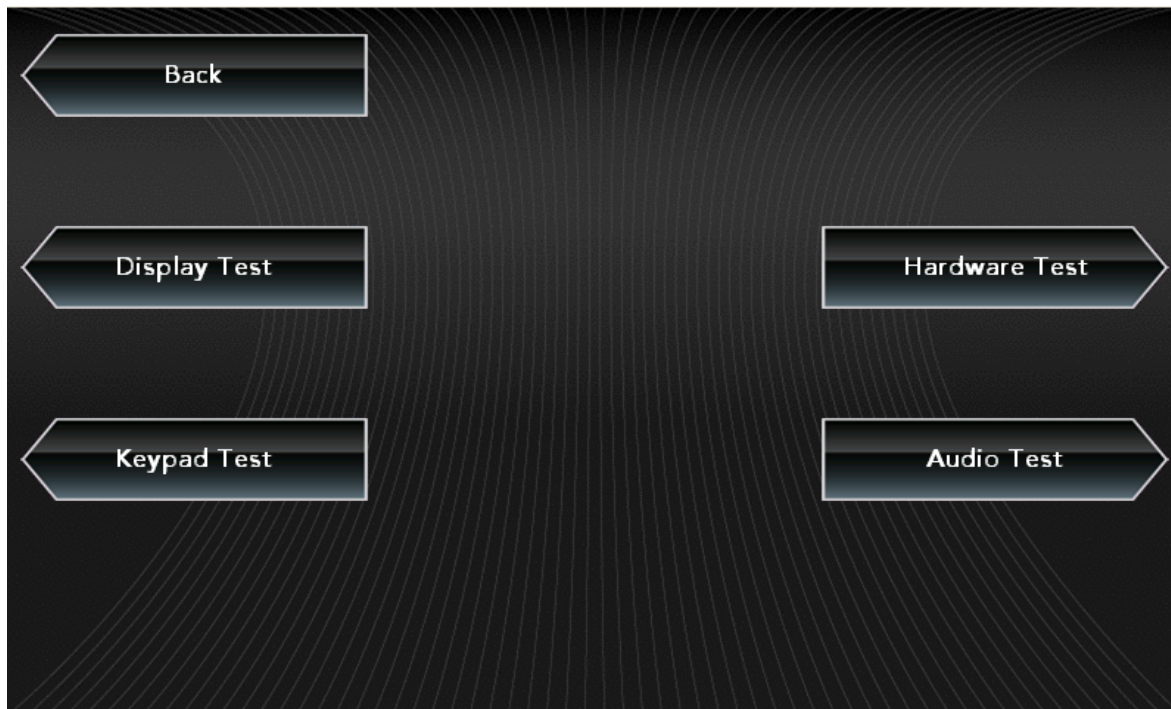
Display test – This tab tests the color settings of the console.   The console will cycle between red, green, and blue when the Continue key is selected.

Hardware Test – This tab allows a service technician to test the RPM sensor and / or the incline motor.   Changing a setting should cause the belt and / or the incline motor to operate.
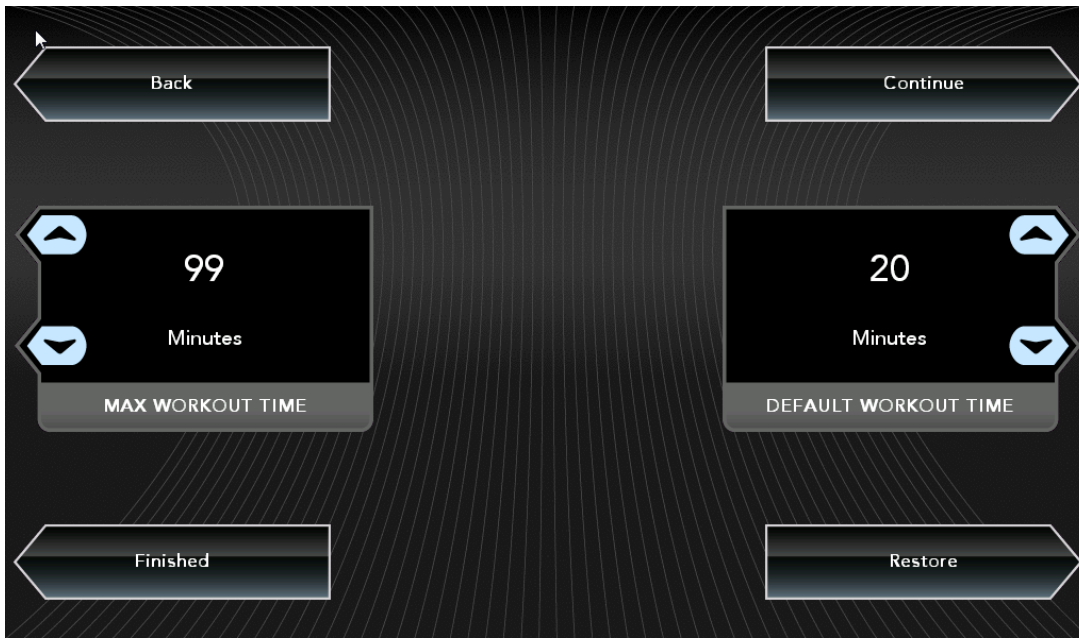
Key Test – Press any key to test the function.
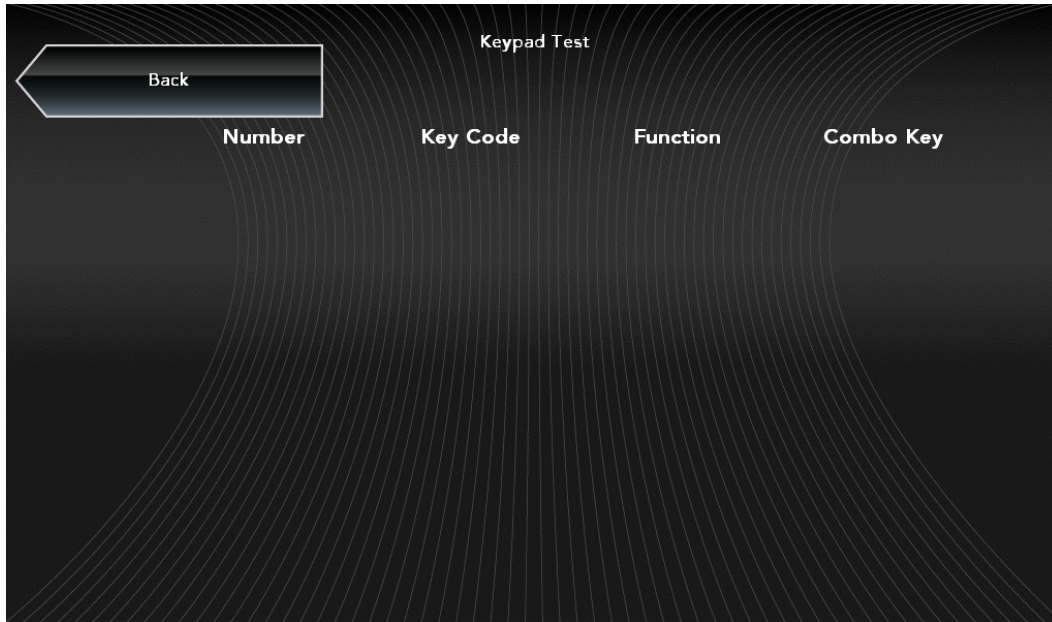
    Audio Test – When this test is chosen, the console chime should sound.

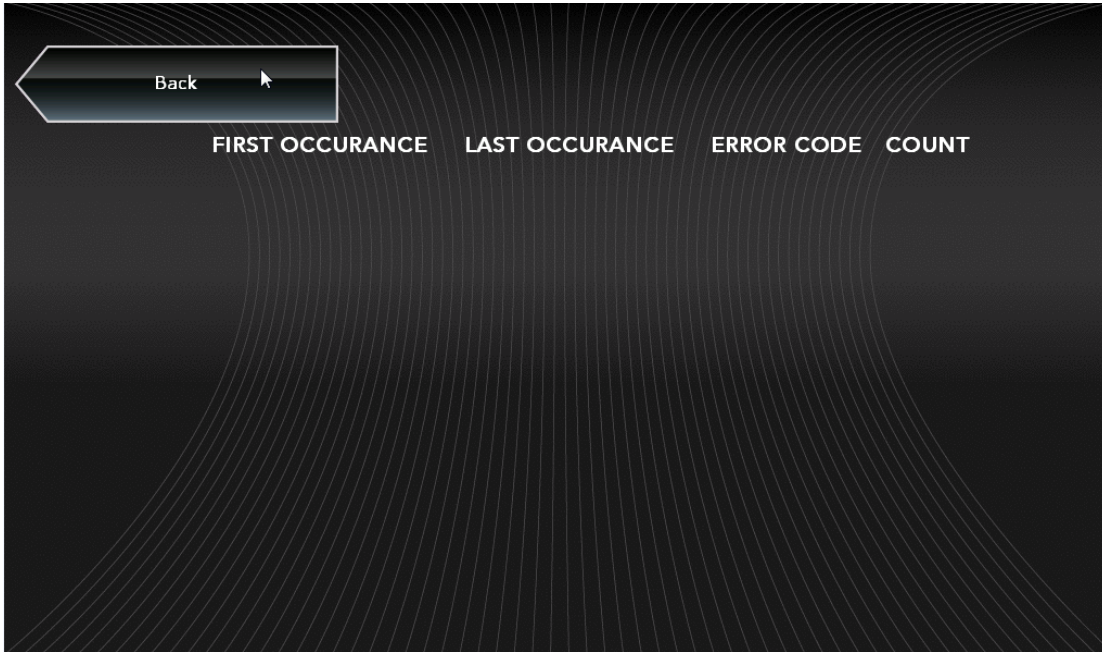### 2.4.4 ENGINEERING MODE (Elegant Console) – Default Tab

The Default Tab includes options for setting Max Workout Time, Default Workout Time, Warm-up Time, Cool Down Time, and Pause Time.

Press the key next to "Continue" to enter the next page of defaults.   Set these defaults using the arrow keys.   *NOTE:* After changing a setting on any page, select "Finished" to complete the setup, the other items will keep the default settings, select "Restore" to restore to the factory settings.

2.4.5 ENGINEERING MODE (Elegant Console) - Error Log Tab

The console will automatically show an error code history for the unit.

FIRST OCCURANCE   LAST OCCURANCE   ERROR CODE   COUNT

2.4.6 ENGINEERING MODE (Elegant Console) – Region Tab

The Region Tab includes settings for Month, Day, Year, Time (hour / minute), Language, Country, and Units (miles / kilometers).

Press the key next to "Continue" to enter the next page of region settings.   Set these region settings using the arrow keys.

NOTE: After changing a region setting on any page, select "Finished" to complete the setup, the other items will keep the default region settings, select "Restore" to restore to the factory settings.
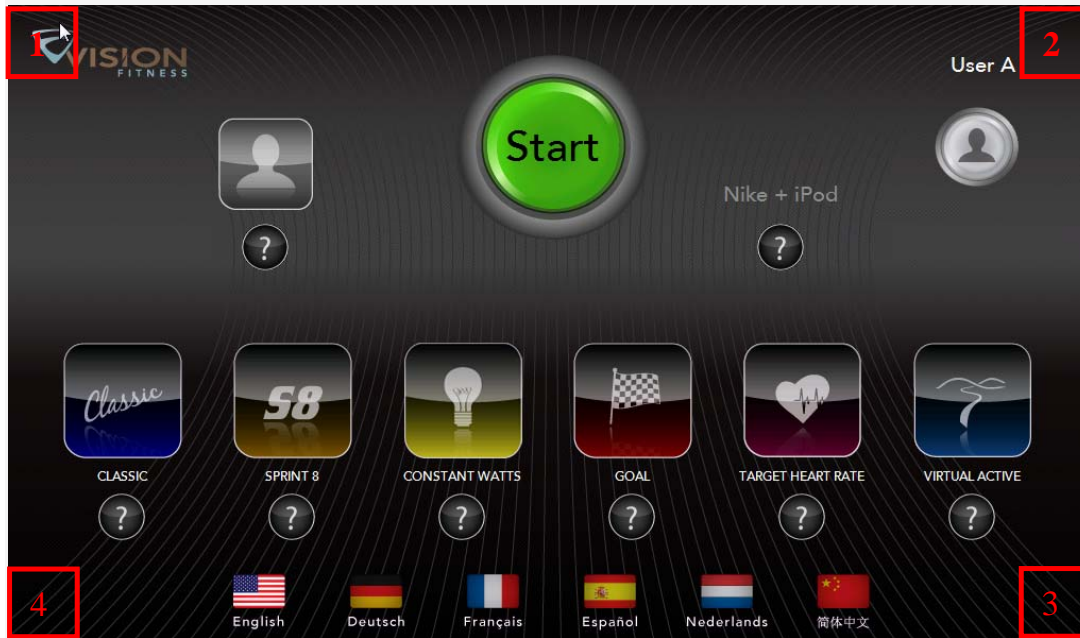
2.4.7 ENGINEERING MODE (Elegant Console) - Service Log Tab

The Service Log Tab allows the club / service provider to keep track of the service history.
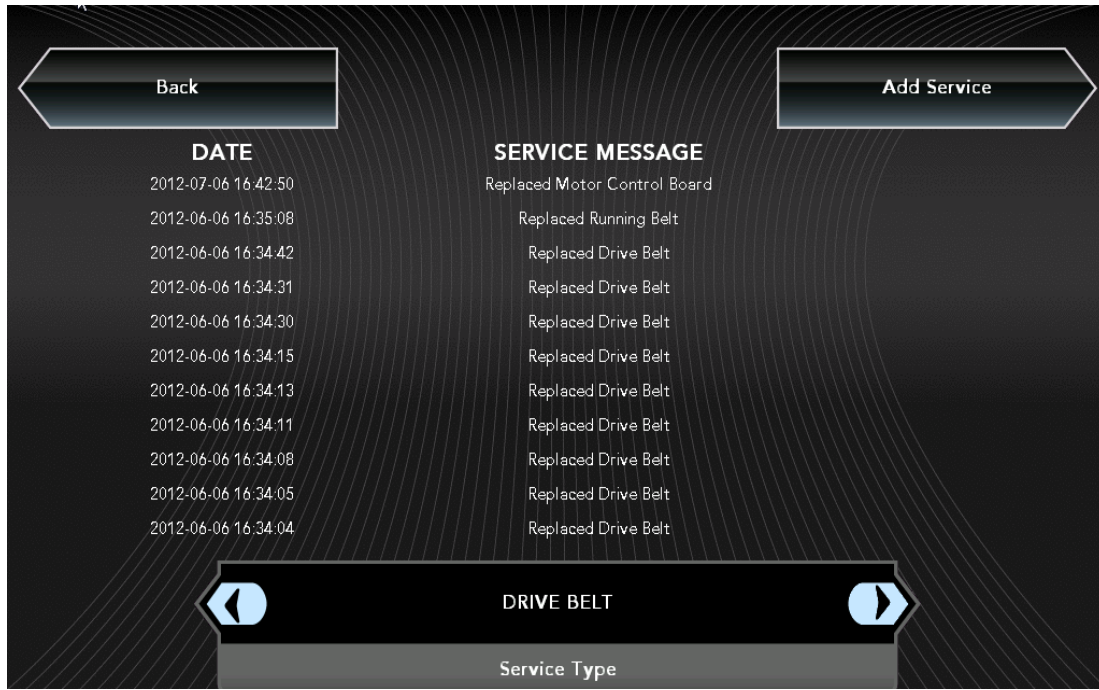
2.5 ENGINEERING MODE - Touch Console

1) To enter Engineering Mode, touch the four corners of the touch screen from 1-4 as shown below.

2) An Engineering Mode parameter list will be displayed on the screen.

3) Select the parameter by touching the parameter list.

4) Set all information using the Touch panel.

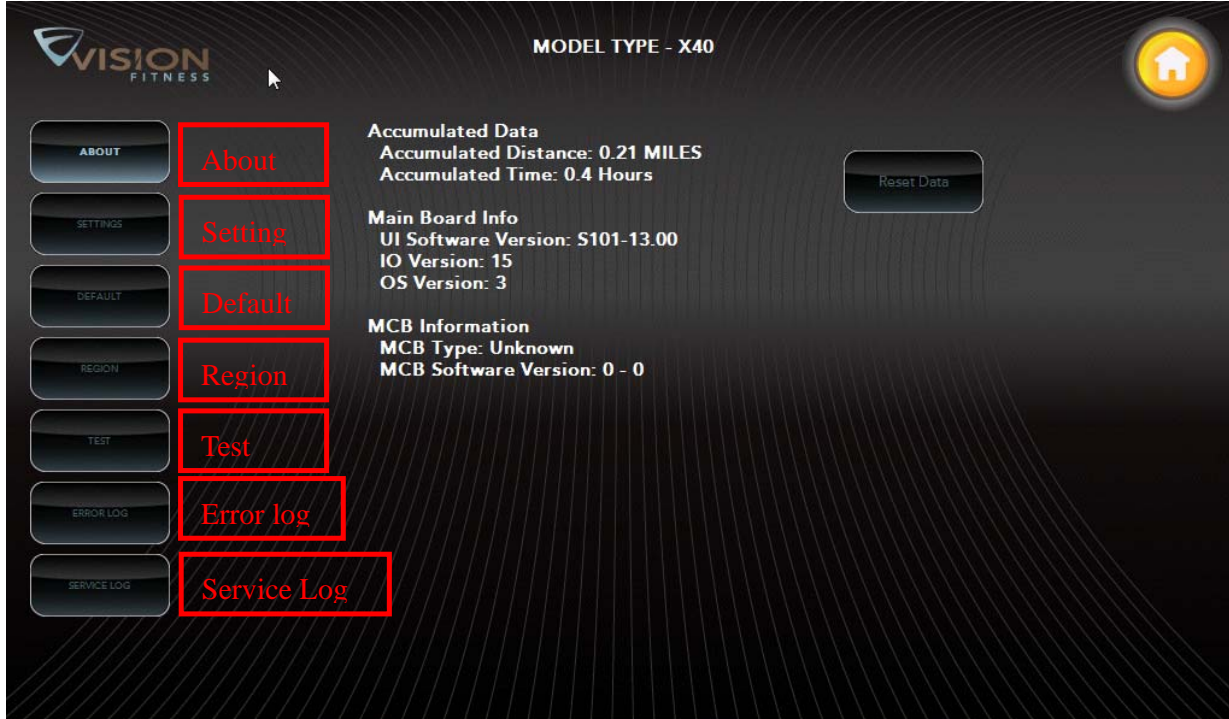5) Press the Home key to save the change to the parameter and exit the Engineering Mode.

2.6 ENGINEERING MODE OVERVIEW - Touch Console

2.6.1 ENGINEERING MODE (Touch Console) - About

The About Tab shows the basic parameters of the console, such as Model Type, Software Version, MCB Version etc…

*NOTE:* Press the Home key at any time to return to normal operation.

Engineer Mode - About	Function & Default	Descriptions	Modified
Accumulated Data	Accumulated Distance	Total distance displayed in native units (miles or kilometers), not editable	Cannot be modified
	Accumulated Time	Total time, not editable	Cannot be modified
Main Board Information	UI Software Version	Application version, not editable	Cannot be modified
	IO version	Sub UCB software version, not editable	Cannot be modified
	OS Version	Operation system version, not editable	Cannot be modified
MCB Information	MCB Type	The frame MCB type, for example: 2.75HP digital MCB	Cannot be modified
	MCB Software Version	MCB Software Version	Cannot be modified

2.6.2 ENGINEERING MODE (Touch Console) - Settings Tab

The Settings Tab used to set the Machine Type, Model and if the Energy Saver is turned on.

Setting: Pressing the **MACHINE TYPE: ELLIPTICAL** will automatically bring up the corresponding select block, according to the frame type to select the appropriate machine, TREADMILL, ELLIPTICAL or BIKE.
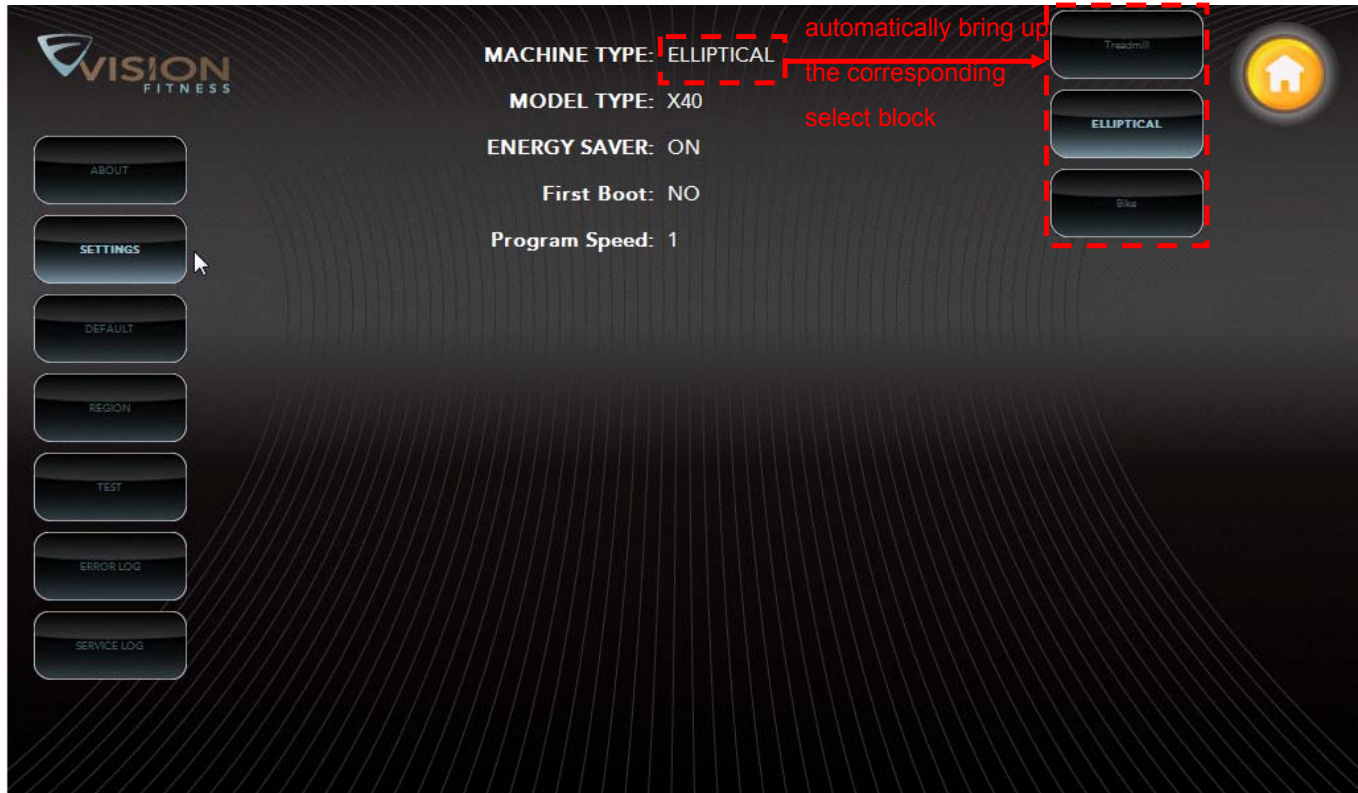
Use the same procedure as Machine Type to set the Model Type, Energy Saver, First Boot and Program Speed.

2.6.3 ENGINEERING MODE (Touch Console) – Default Tab

The Default Tab displays the default information of the console, such as Workout Time, Weight, Age etc…

Selecting the data that needs to be set will bring up a slider to adjust the corresponding information.   Refer to the figure below:

Touching here will bring up a slider

Touch this arrow to adjust the information

Restore to the factory settings
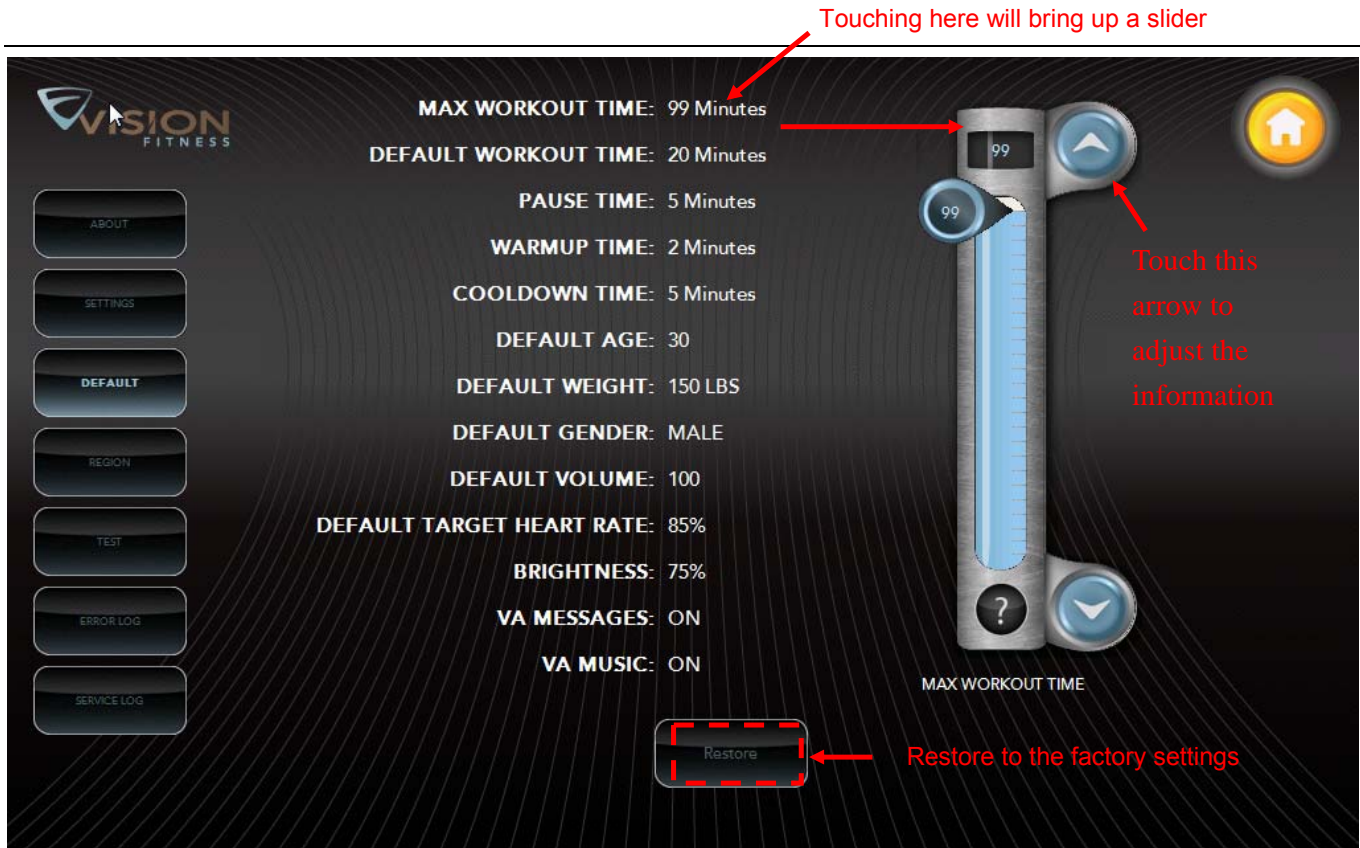
Engineer Mode - Default	Function & Default	Descriptions	Modified
Time	Maximum Workout Time Default: 99 minutes	This option enables you to set the maximum workout duration limits	Maximum: 99 Minutes Minimum: 5 Minutes
	Default Workout Time Default: 20 minutes	This option enables you to set user default workout time	Maximum: 99 Minutes Minimum: 5 Minutes
	Pause Time Default: 5 minutes	This option enables you to set workout pause time, the console will reset when this time expires	Maximum: 99 Minutes Minimum: 5 Minutes
	Warm Up Time Default: 2 minutes	This option enables you to set user's warm up time	Maximum: 99 Minutes Minimum: 5 Minutes
	Cool Down Time Default: 5 minutes	This option enables you to set users Cool Down Time after a workout	Maximum: 99 Minutes Minimum: 5 Minutes
Age	Default Age Default: 30	This option enables you to set the user's default age if not selected during setup	Maximum: 99 Minimum: 13
Weight	Default Weight Default:150LBS	This option enables you to set user's default weight if not selected during setup	Maximum: 375LBS Minimum: 55LBS
Gender	Default Gender Default: Male	This option enables you to set user's gender if not selected during setup	Male/Female
Volume	Default Volume Default: 20	This option enables you to set speaker or earphone volume	Maximum: 20 Minimum: 0

Heart Rate	Default Target Heart Rate Default: 85%	This option enables you to set target heart rate for some heart rate programs	Maximum:100% Minimum: 0
Brightness	Brightness Default: 75%	This option enables you to set the LCD panel brightness level	Maximum:100% Minimum: 0
Virtual Active Message	VA Message Default: on	This option enables you to set the VA, user can choose the VA message displayed on the screen or not	On/off
Virtual Active Music	VA Music Default: on	This option enables you to set the VA, user can choose the VA music played or not	On/off

Use the same operation as Max Workout Time to adjust the other Default information.

Press "Restore" to restore to the factory settings.

2.6.4 ENGINEERING MODE (Touch Console) – Region Tab

The Region Tab is used to set Date, Time, Language, Country, and Units. Touch the item that needs to be set, the screen will display a number keypad. Use the keypad to set the information, and press "Home" to save the information. Refer to the figure below:
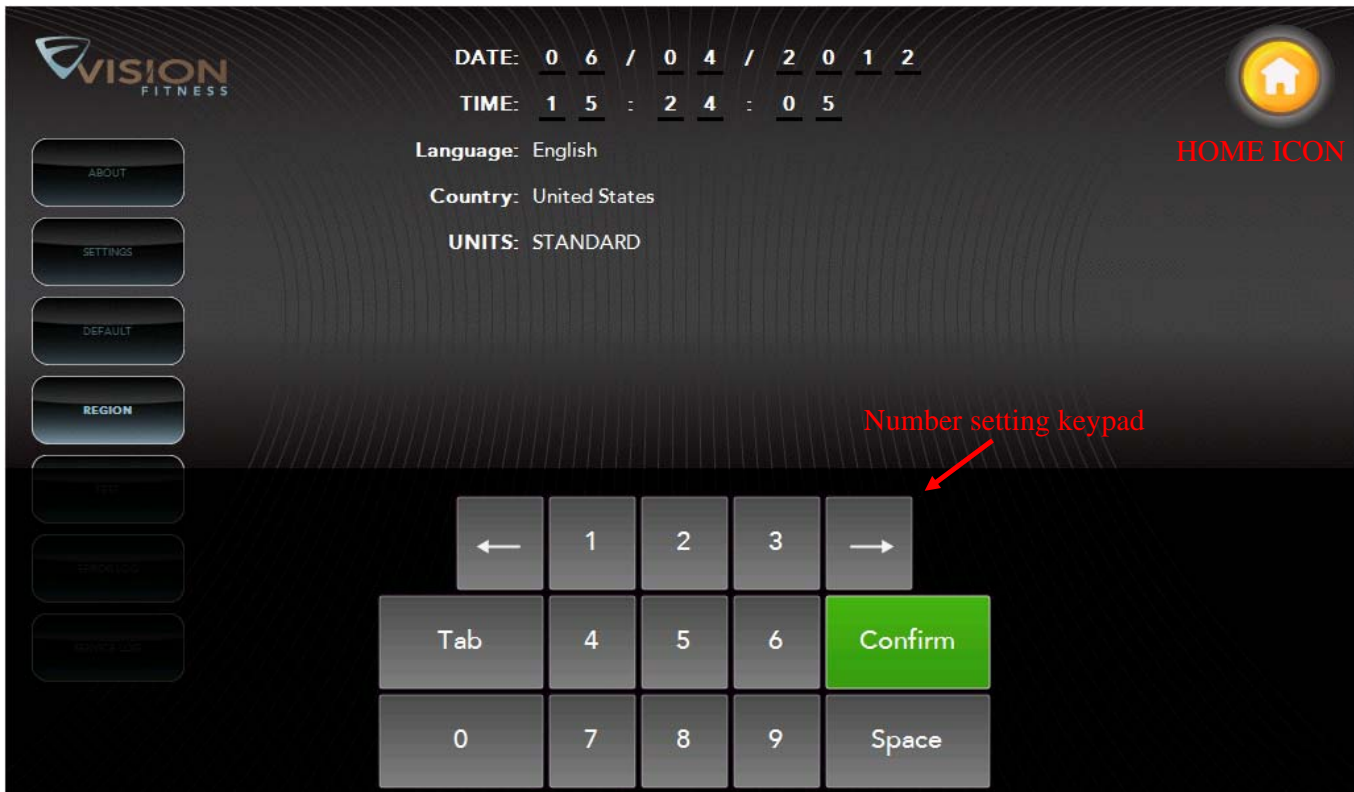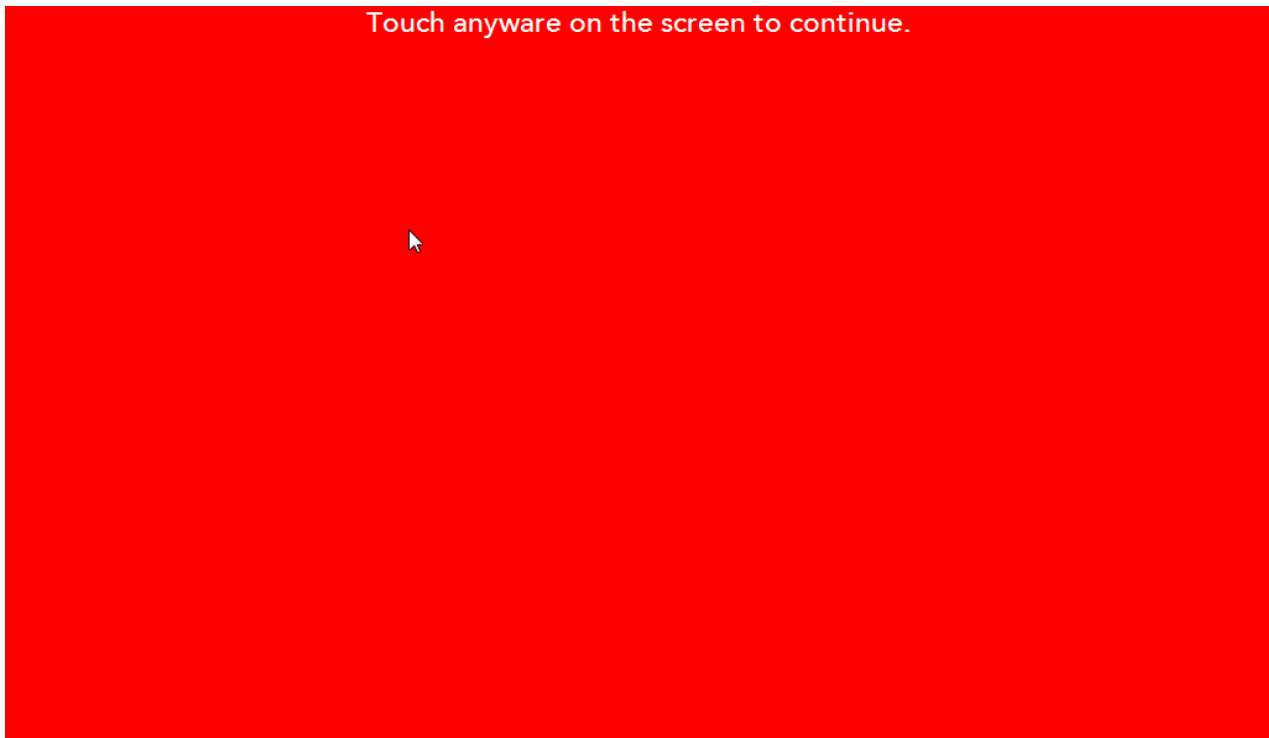
2.6.5 ENGINEERING MODE (Touch Console) - Test Tab

The Test Tab is used to test the corresponding hardware.
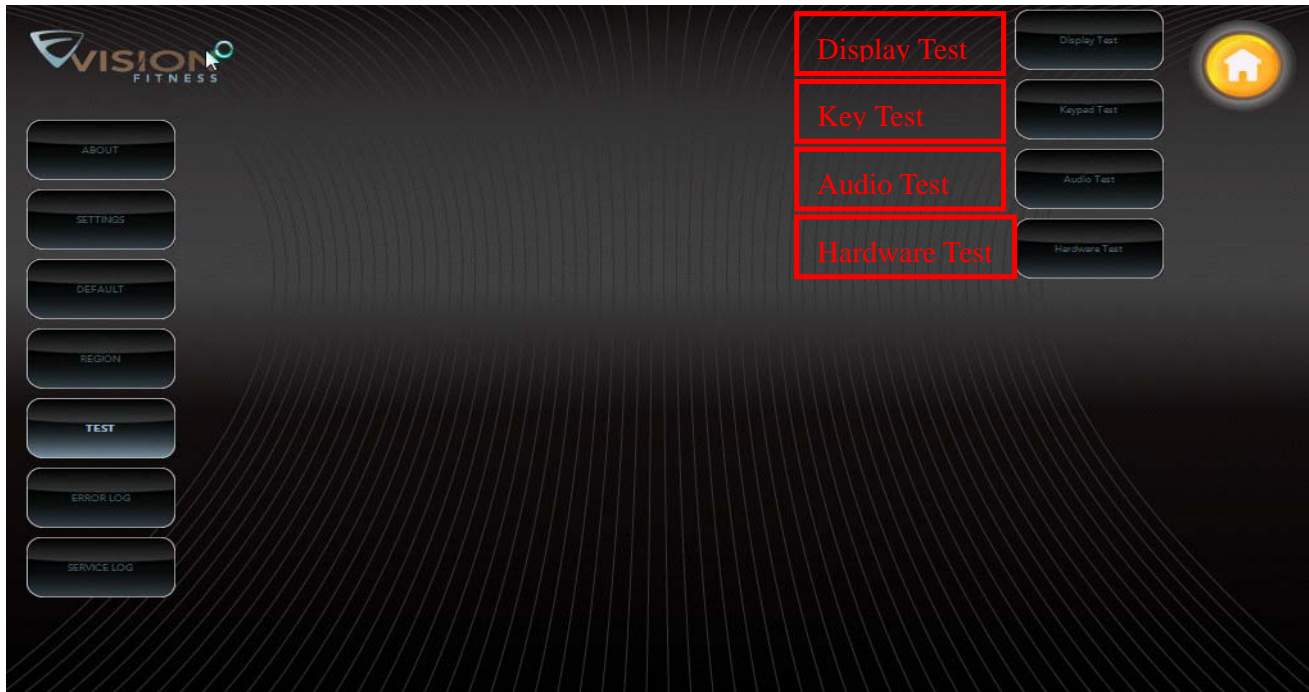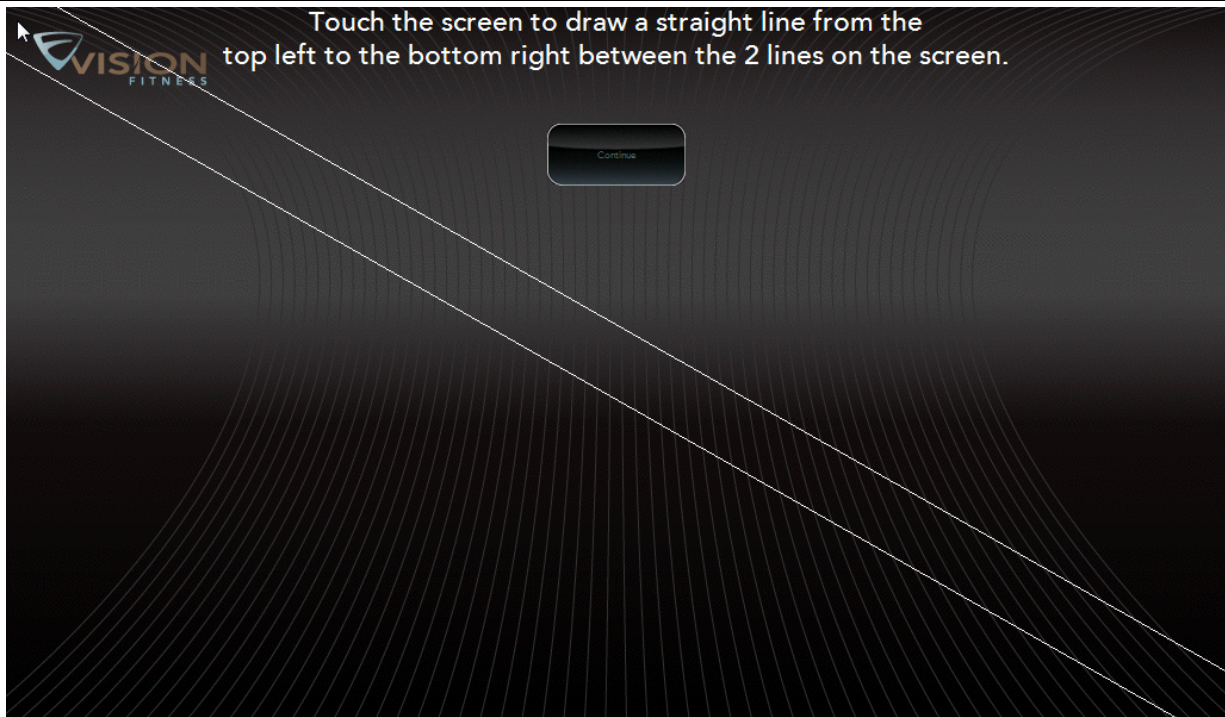

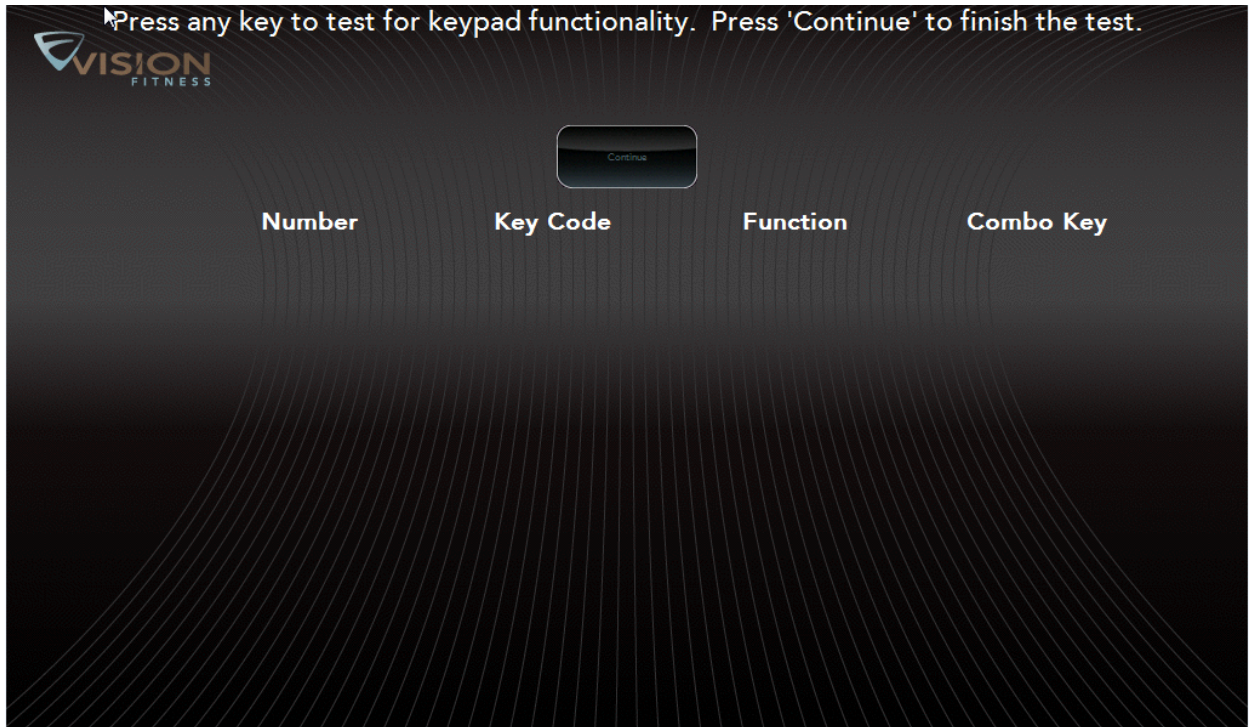**Display Test –** Tests the reliability of the LCD and Touch panel.

Display Test - Touch panel Test

Use your finger to draw a line following the instructions on the screen.   If the test fails, selecting "continue" will bring the user directly into the calibration screen. Refer to the figure below：

Touch the screen to draw a straight line from the
top left to the bottom right between the 2 lines on the screen.

Continue

Key Test – Tests the functionality of the keys. Select any key on the keypad to display the definition, the function, and the code of the key. If there is no feedback, check the keypad connection with the UCB. Select Continue to exit the test.

Press any key to test for keypad functionality. Press 'Continue' to finish the test.

Continue

Number   Key Code   Function   Combo Key

Audio Test – When the Audio Test key is pressed, the console should chime.

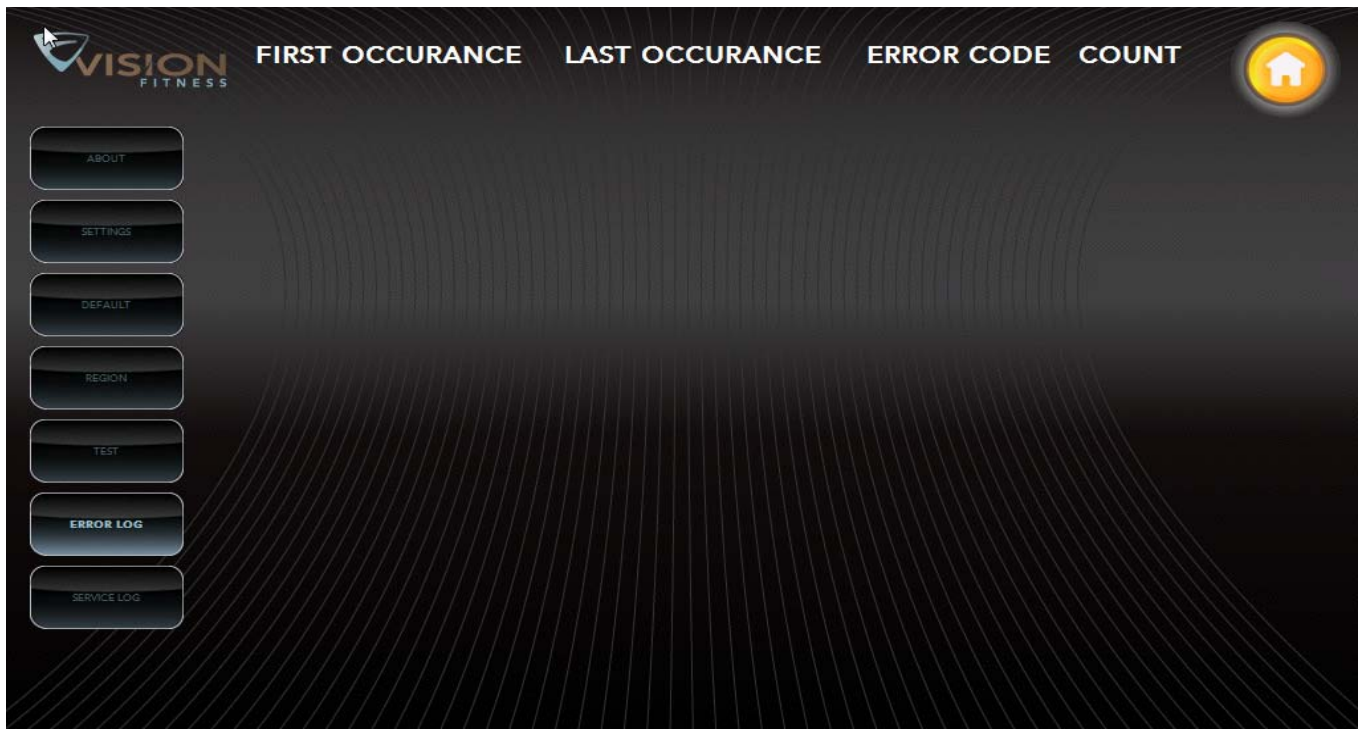**Hardware Test –** This tab allows a service technician to test the RPM Sensor, Incline Motor and Heart Rate components.   Changing a setting should cause the belt, incline motor, or heart rate display to operate.
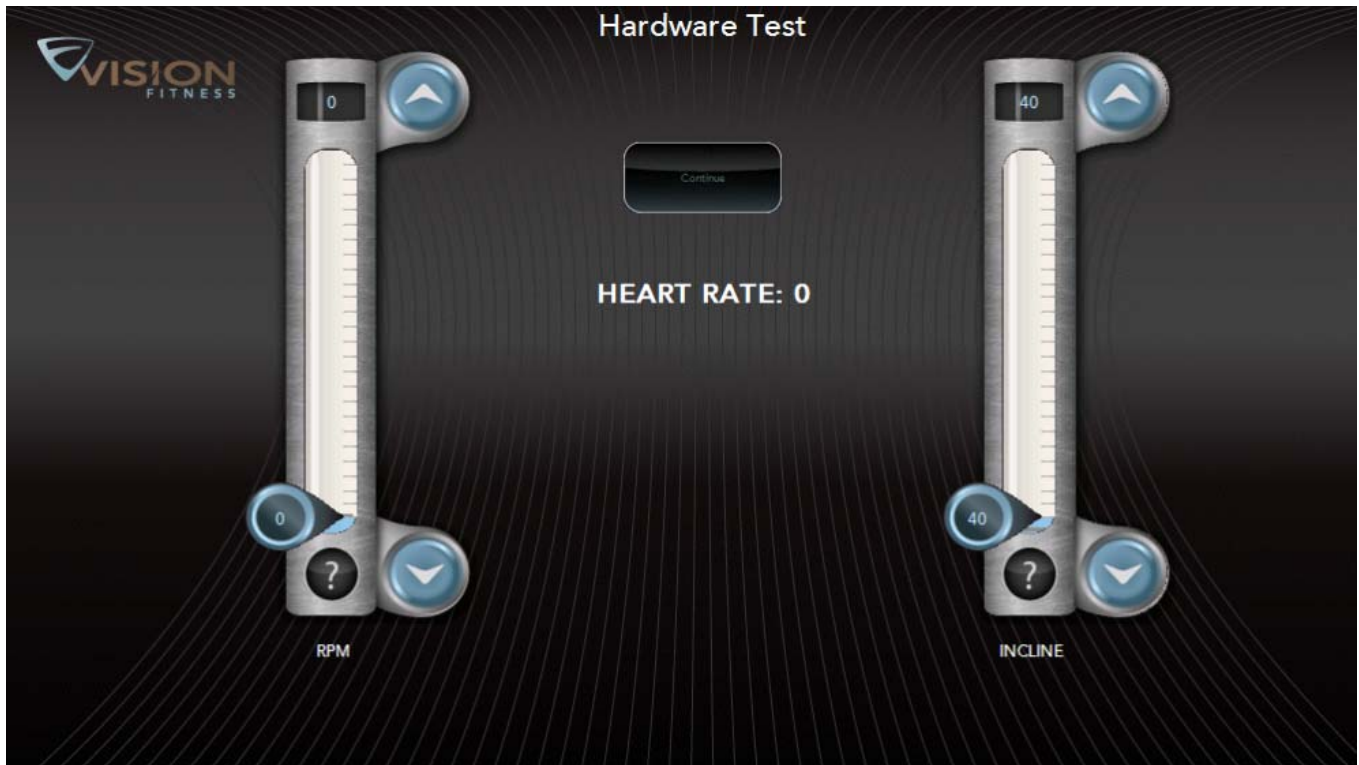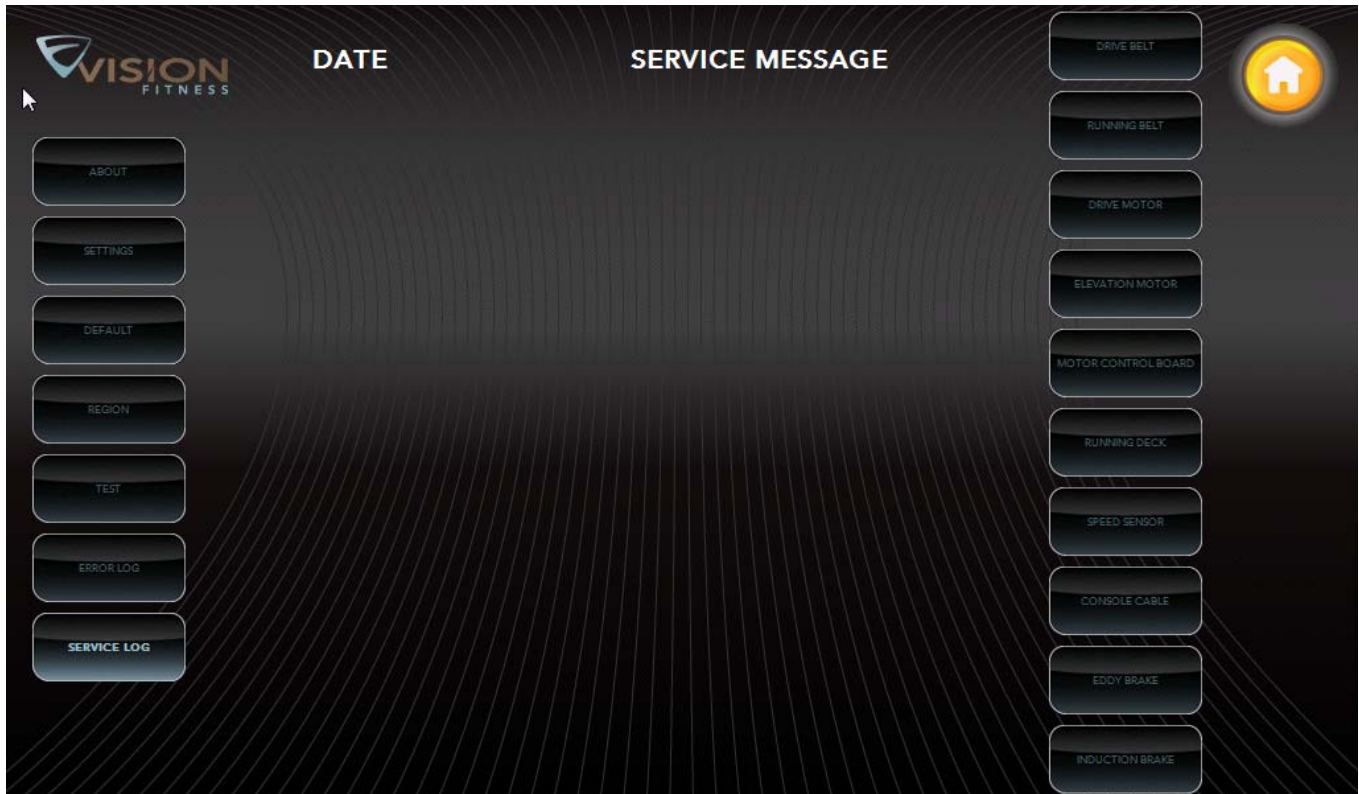

2.6.6 ENGINEERING MODE (Touch Console) - Error Log Tab

The console will automatically show an error code history for the unit.

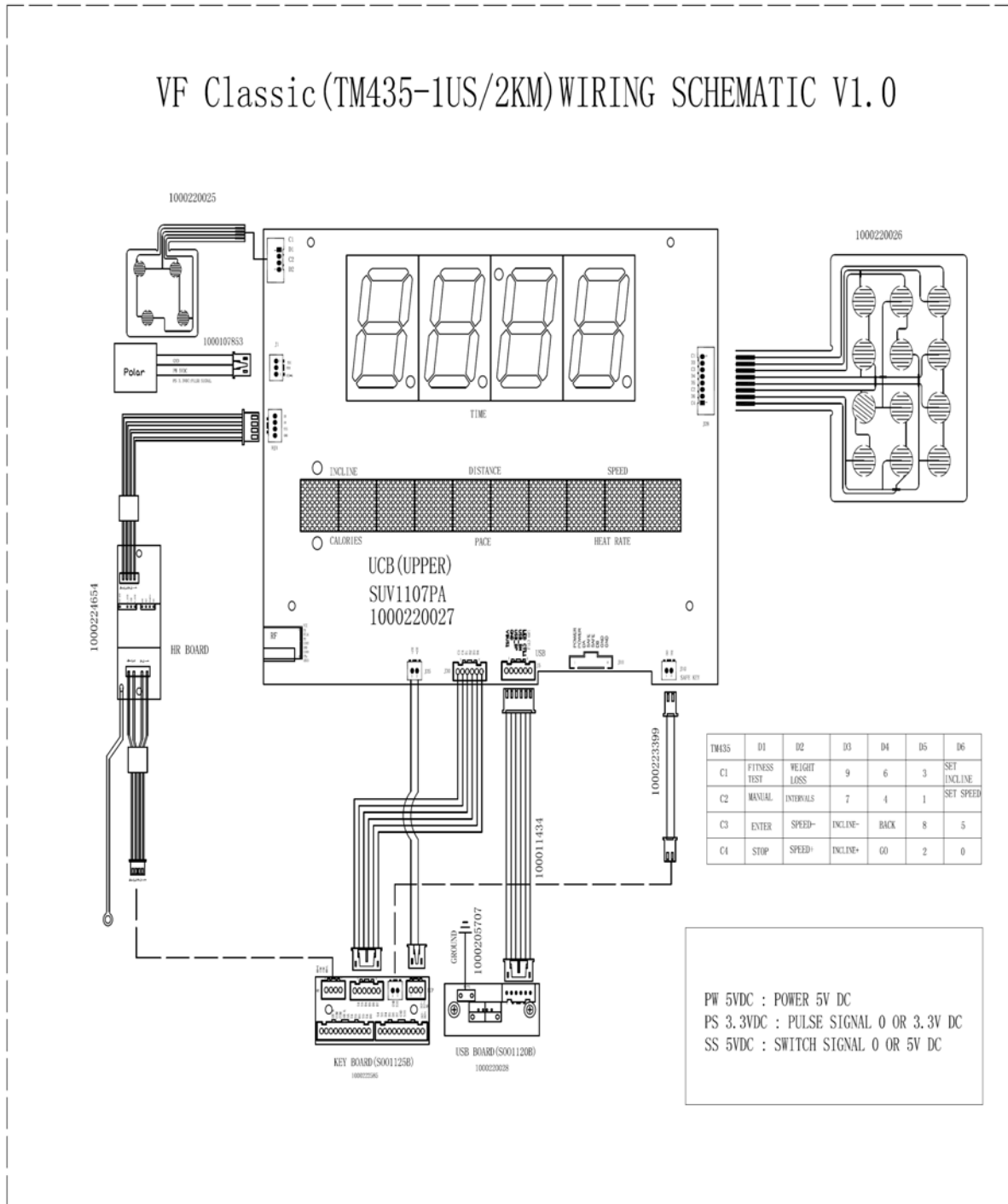## 2.6.7 ENGINEERING MODE (Touch Console) - Service Log Tab

The Service Log Tab allows the club / service provider to keep track of the service history.

3.1 ELECTRICAL DIAGRAMS

3.1.1 Electrical Diagram –TM Classic Console

VF Classic(TM435-1US/2KM)WIRING SCHEMATIC V1.0

1000220025

1000220026

1000107853

Polar

TIME

INCLINE   DISTANCE   SPEED

CALORIES   PACE   HEAT RATE

UCB(UPPER)
SUV1107PA
1000220027

1000224654

HR BOARD

RF

USB

1000223399

100011-434

1000205707

KEY BOARD(S001125B)

USB BOARD(S001120B)
1000220028

TM435	D1	D2	D3	D4	D5	D6
C1	FITNESS TEST	WEIGHT LOSS	9	6	3	SET INCLINE
C2	MANUAL	INTERVALS	7	4	1	SET SPEED
C3	ENTER	SPEED-	INCLINE-	BACK	8	5
C4	STOP	SPEED+	INCLINE+	GO	2	0

PW 5VDC : POWER 5V DC
PS 3.3VDC : PULSE SIGNAL 0 OR 3.3V DC
SS 5VDC : SWITCH SIGNAL 0 OR 5V DC

3.1.2 Electrical Diagram - TM Elegant Console (10inch LCD Console; No Touch Panel)

Speaker
1000228319

Speaker
1000228319

RF Board
1000220061

1000226771

1000222203

1000220017
Mainboard Bottom

keypad
1000220012

keypad
1000220015

Hand pulse
1000224660

1000222202

1000222587

Main key wire
1000224517

Safe key wire
1000224516

1000101657

console
wire,connect
to frame

1000094023

1000205707

Polar

USB BOARD
1000220028

1000222585
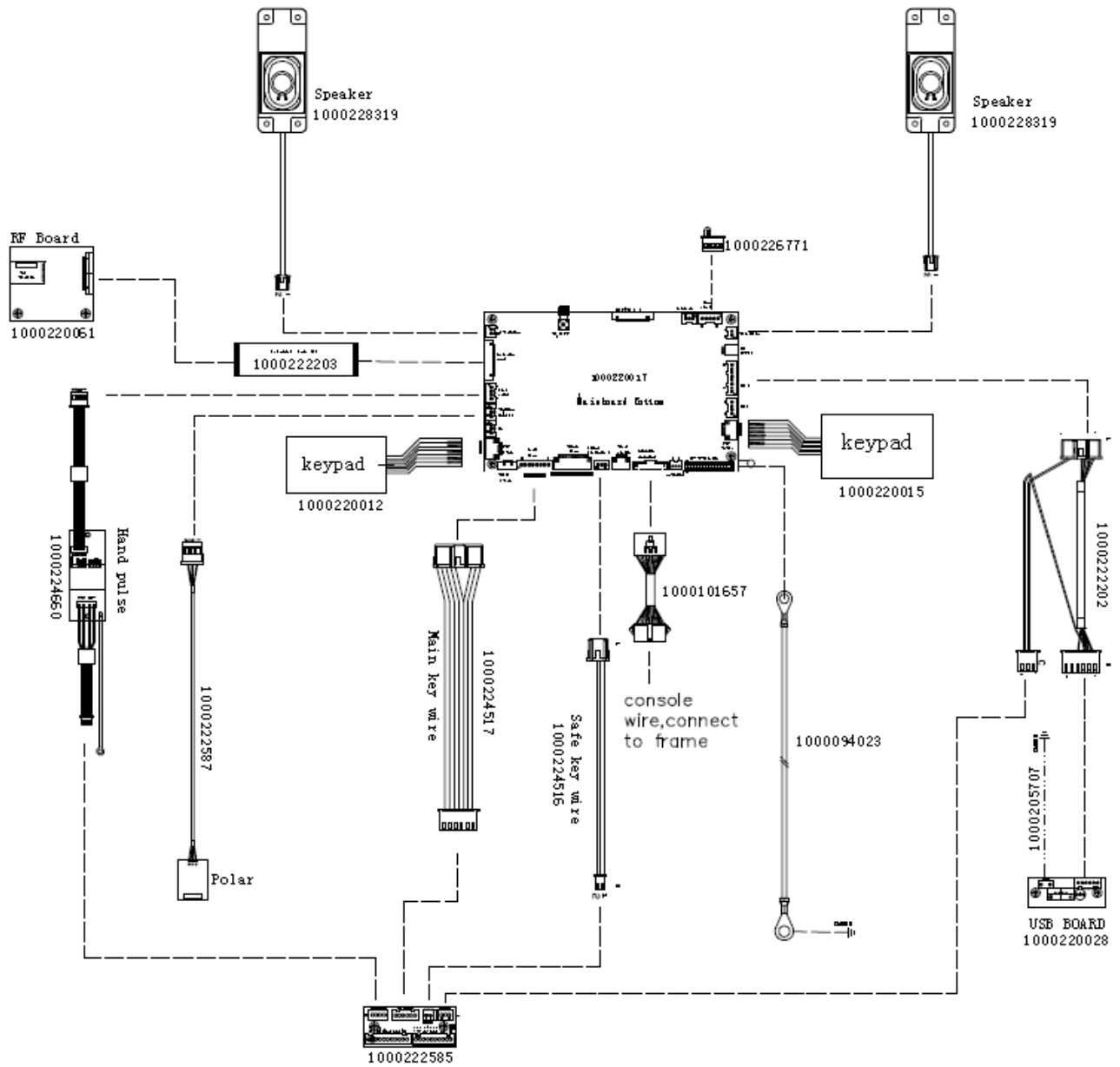
3.1.3 Electrical Diagram - TM Touch Console (15inch LCD Console; Touch Panel)

Audio out

1000224562

1000222205

Speaker
1000228319

Speaker
1000228319

1000222204

1000220062
IPOD Port

IPOD Board

1000220061

0.5pitch 40pin FFC
1000222203

1000225722
Mainboard Bottom

1000224660

1000222202

1000222587

1000224517

1000101657

console
wire,connect
to frame

1000094023

1000224516

1000205707

USB BOARD
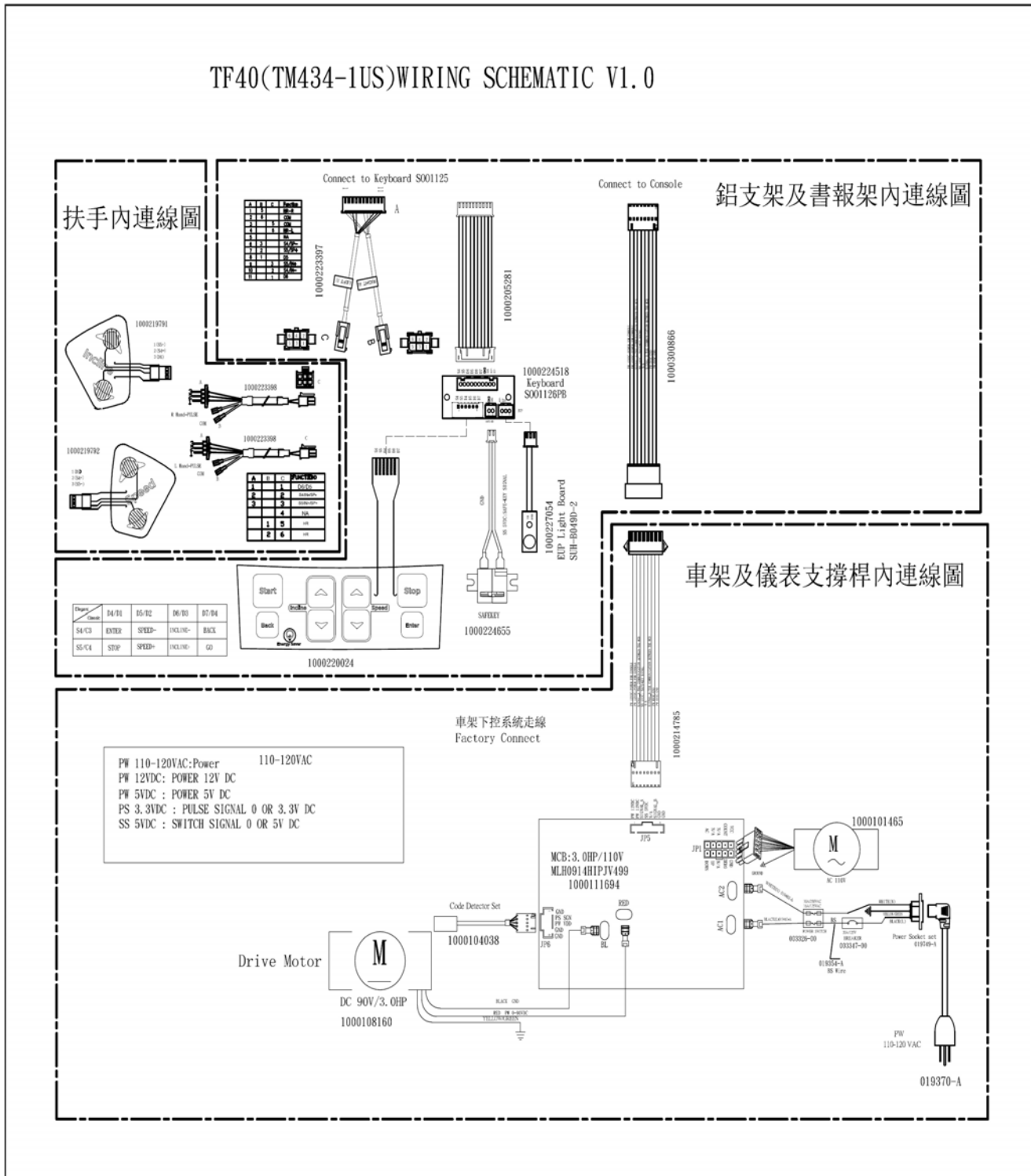1000220028

1000222585
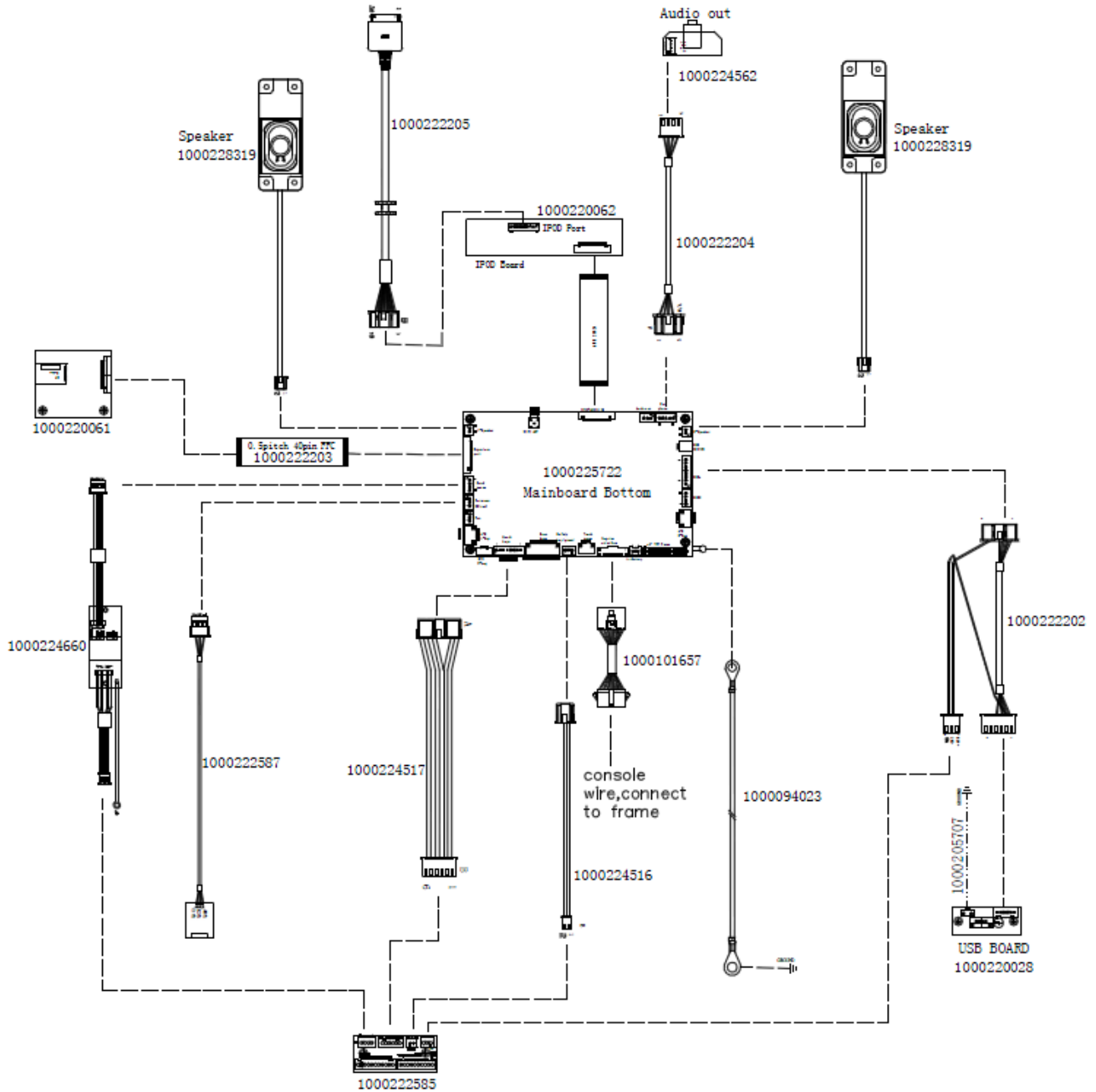
3.1.4 Electrical Diagram - TF20 Frame

TF20(TM432-1US)WIRING SCHEMATIC V1.0
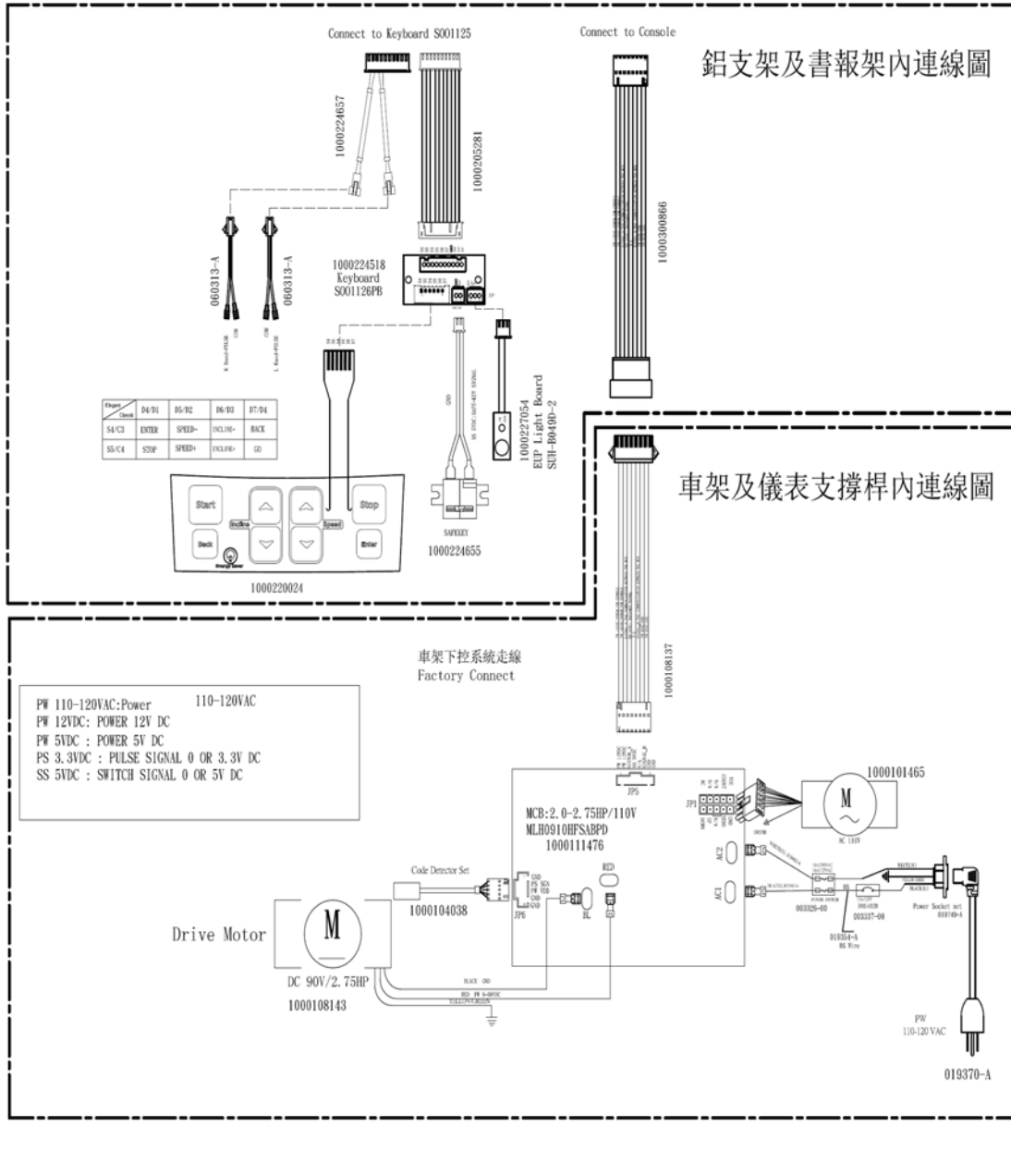
3.1.5 Electrical Diagram - TF40 Frame

TF40(TM434-1US)WIRING SCHEMATIC V1.0

3.1.6 Electrical Diagram - T40 Frame

T40(TM433-1US)WIRING SCHEMATIC V1.0
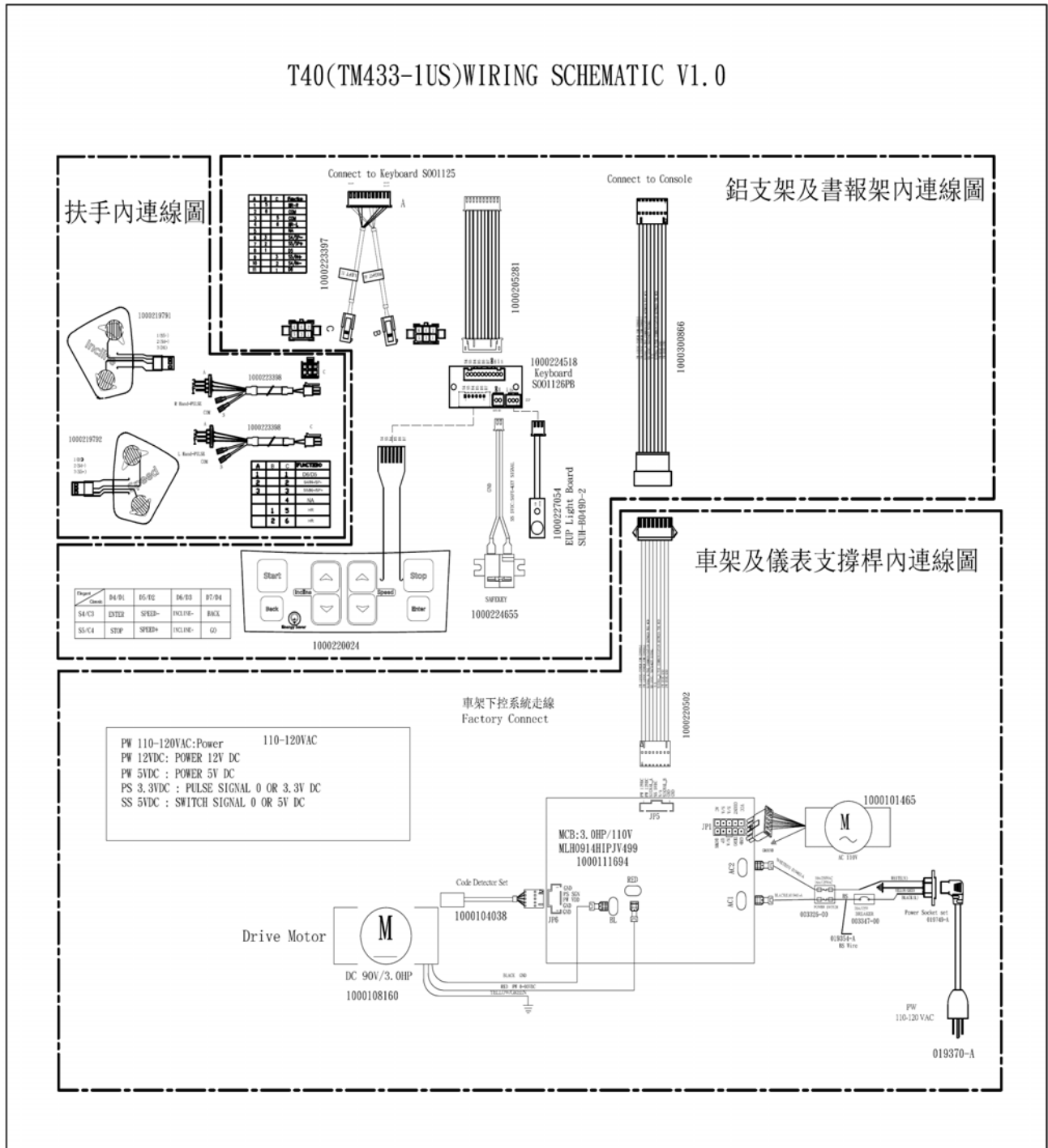
3.2 TROUBLESHOOTING – No Power to the Console

1) *SYMPTOM:*

    a. The power switch is in the on position, but the console does not light up, no display backlight.

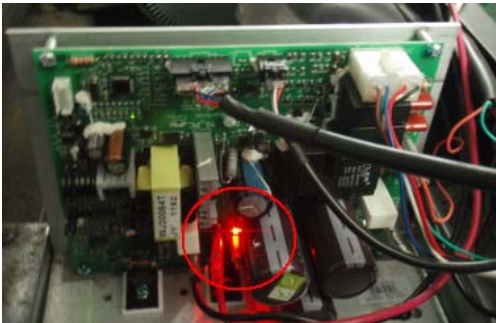2) *SOLUTION:*

   a. First check to see if the power switch is lit.   If it is not, try a different outlet.

    If the power switch still does not light up with a known good outlet, inspect and test the power components including the power cord, socket, circuit breaker, and power switch.   Replace as needed.


    b. Check to see if the MCB has power. There is a red power LED on the MCB that should be lit.

    c. If the MCB does not have power, check the connection of the power wiring from the power receptacle to the MCB. Use a multi-meter to measure AC1 & AC2, AC voltage should be the same as local's standard voltage (110V-240V).   If AC voltage value is standard, replace the MCB.
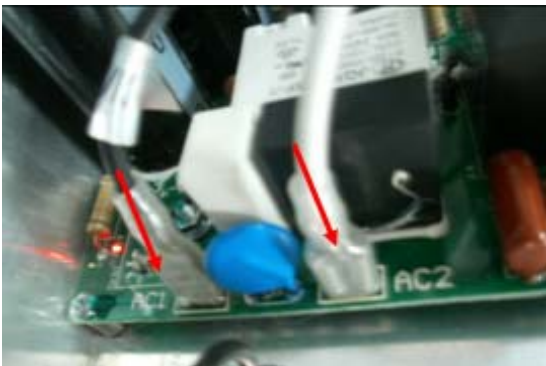

    d. Make sure that the input to the console's power supply is a 12VDC, use a multi-meter to measure the voltage of the four pins in the figure below, pins 1 & 2 should be 12VDC and pins 7 & 8 should be ground.

LVDS 接口 **GND** **12VDC**
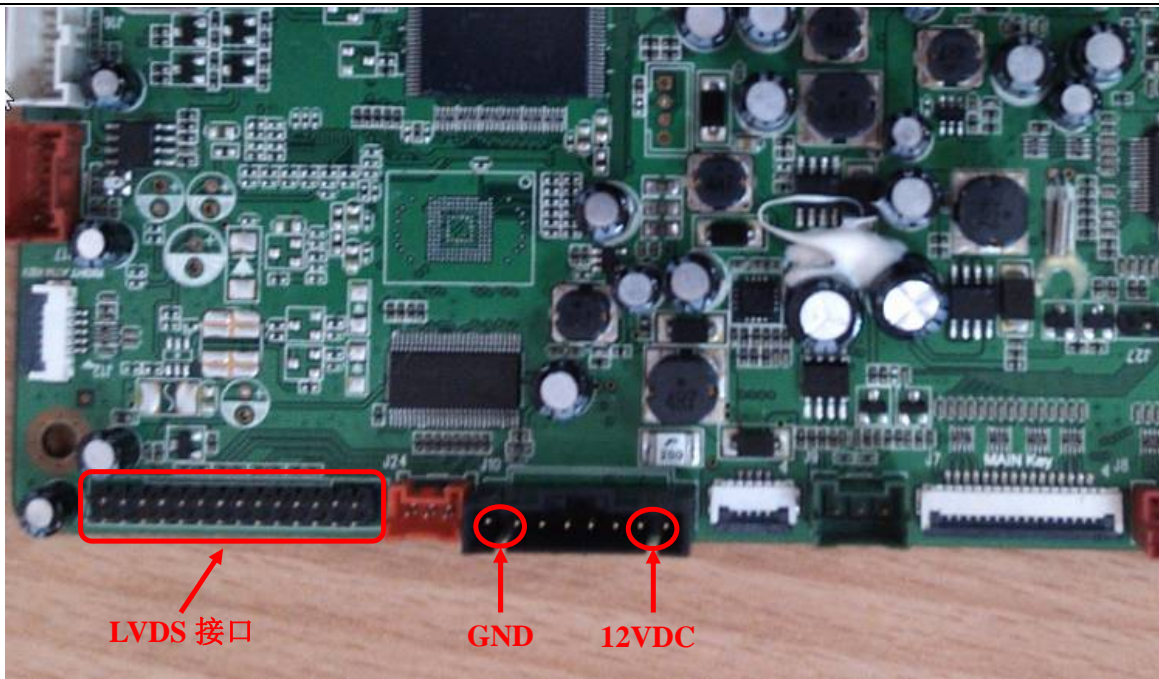
e. If there is not 12VDC power supplied, check if the console cable is in good condition. If yes, check the output power of the MCB (12VDC). If no output, replace the MCB
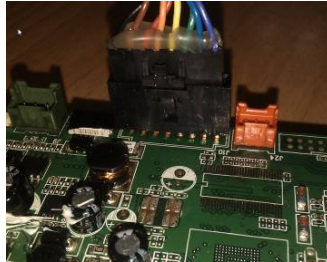
| OK | UCB connection floating high | cable connection not be inserted fully |

f. If the 12VDC power supply is ok, re-confirm the connection of the LVDS* interface to the display.   Powered on, the UCB power supply is 12VDC, confirm whether the voltage is negative as the figure shows.

g. If the power output of the LVDS interface is ok, check the LVDS wire for breakage or loose connections, if not ok, replace the display.

h. If there is no 12VDC output from the LVDS interface, replace the console.

* **LVDS** ：Low-Voltage Differential Signaling，LVDS interface is LCD Panel universal interface standard

3.3 TROUBLESHOOTING – System Will Not Start

1) **SYMPTOM:**

   a. LCD displays back light, but the system does not start up.

   b. The LCD backlight is lit, but the Vision Logo never clears, the LCD displays nothing.

2) **SOLUTION:**

   a. Replace the console.

3.4 TROUBLESHOOTING – Machine Will Not Start

1) **SYMPTOM:**

   a. The unit has power, and a program can be started, but no control of the program.

2) **SOLUTION:**

   a. Enter the Engineering Mode, select Settings, and confirm the MACHINE and MODEL TYPE are correct.

   b. If not correct, select the correct MACHINE and MODEL TYPE，and confirm the function again.

   c. If correct, please check the MCB LED blink code.　Refer to the MCB error code list below.

LED Blinks	Status	Description	Possible Components Damaged
1	Works normally	Works normally	
2	Optical Encoder without feedback	The optical encoder is without feedback for 3 seconds during start procedure or 1 second during workout.	Poor contact or damage to the optical encoder
3	Overload	The motor current is over rated for more than 4 seconds.	Motor
4	Rampage	The motor power components damaged or speed up too fast.	Motor
5	The safety key fell off	The safety key fell off.	Safety Key
6	The incline motor is stuck or has lost efficiency	There is no signal to the MCB when the incline motor is energized.	Incline Motor
7	Communication abnormal	No or abnormal communication between the console and MCB.	Console Cable, UCB, or MCB
8	Bad connection between the incline motor and the MCB	The incline motor cannot go back to absolute "0" degrees.	Incline Motor or MCB

   d. If the MCB and the console cable are well-connected, please update the IO software version.　Check the unit for function again after updated.

   e. If the issue is still present, replace the console.

3.5 TROUBLESHOOTING – Touch Panel Issues

## Touch panel issues

1) *SYMPTOM:*

    a. Touch screen is not accurate or invalid.

2) *SOLUTION:*

    a.   If the touch screen is not accurate, or has a slight deviation, simply press the "Enter" and "Stop" keys to enter the screen calibration mode.

    b.   If the touch screen calibration does not work, check the touch screen for visible damage, indentation, or deformation. If so, replace the entire console.

    c.   If not, confirm whether the touch screen, FPC wire is well-connected with the main board.

TP connect on the main board

TP FPC wire
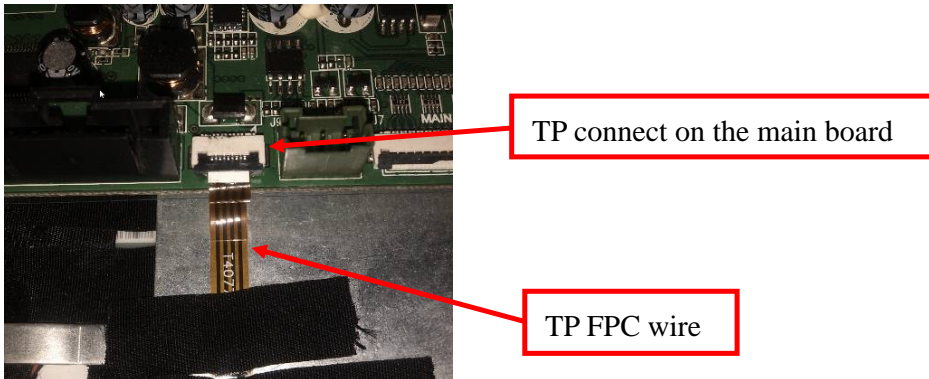
    d.   If well-connected, recalibrate the touch screen (same steps as (a)), if the screen cannot be calibrated, replace the console.
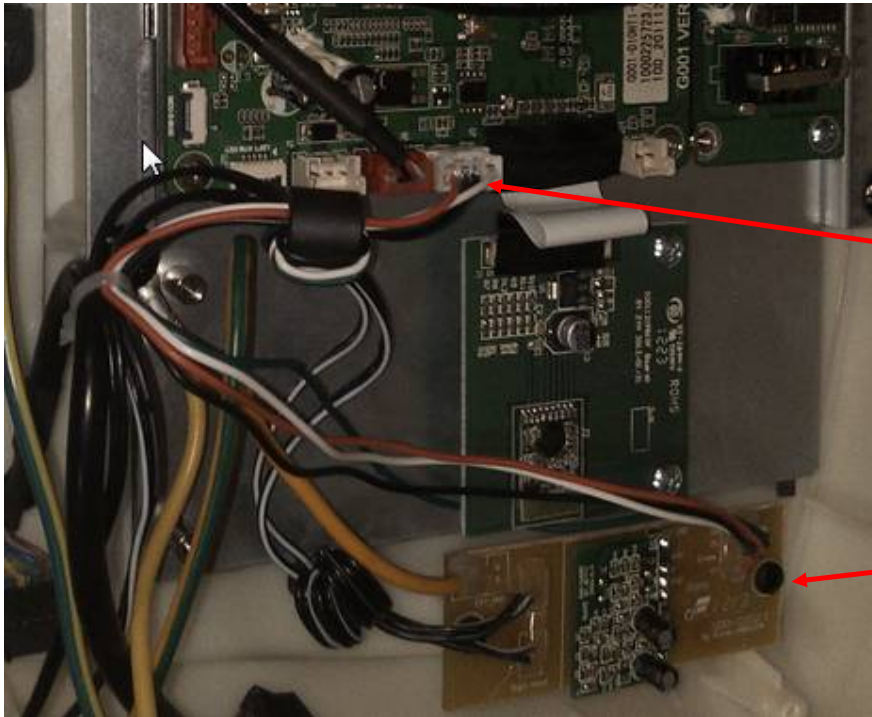
3.6 TROUBLESHOOTING – Heart Rate Issues

1) **SYMPTOM:**

   a. The console does not display the heart rate when holding the heart rate grips.

2) **SOLUTION:**

   a. First check if the heart rate grip is well-connected, not broken / damaged. Replace the HR grip / wiring as needed.

   b. Confirm whether the heart rate board is well-connected with the UCB.

Heart Rate Board connected to the UCB

Heart Rate Board

   c. If well-connected, replace the heart rate board. If heart rate still does not work, replace the console.
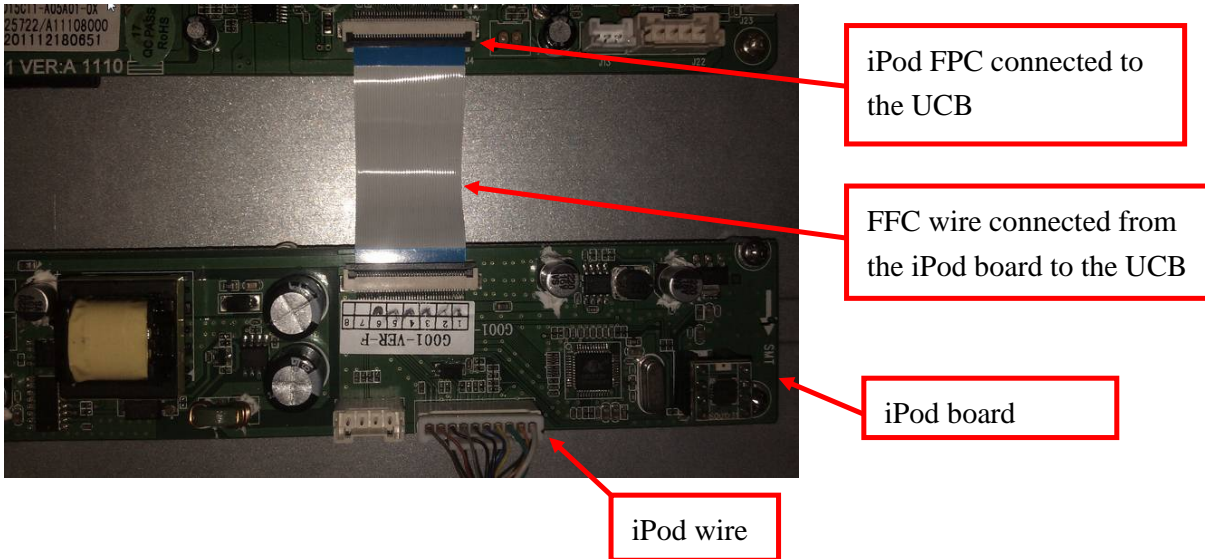
3.7 TROUBLESHOOTING – iPod Issues

1) **SYMPTOM:**

    a. Cannot connect the iPod prompt shown on the screen (Touch console only).

2) **SOLUTION:**

    a. Confirm whether the iPod cable is well-connected, not broken or damaged.

iPod FPC connected to the UCB

FFC wire connected from the iPod board to the UCB

iPod board

iPod wire

    b. Replace the iPod cable and try again. Refer to the figure below regarding the iPod cable and the iPod board.

iPod Wire

1000222205

1000220062

iPod PCB Board
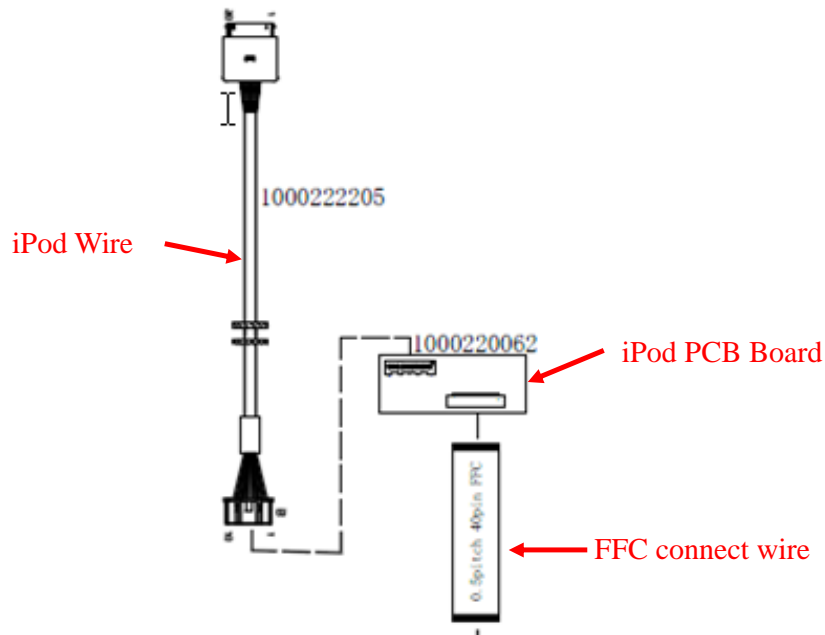
FFC connect wire

    c. Check the FFC connect wire for damage. If any is found replace the FFC wire.

    d. If the iPod still cannot connect, replace the iPod PCB board.

    e. If the iPod still cannot connect after the iPod board was replaced, replace the UCB.

## 3.8 TROUBLESHOOTING – Speaker / Audio Issues

1) **SYMPTOM:**

   a. The speaker has no sound output; the headphones have no sound output.

2) **SOLUTION:**

   3.8.1 Elegant

   a. If the speaker has no sound output, confirm whether the speaker wire is well-connected with the UCB.

   b. If well-connected, make sure that the audio output short-circuit terminals are tight.   Refer to the electrical diagram to see where the audio output short-circuit terminals should be plugged in at.
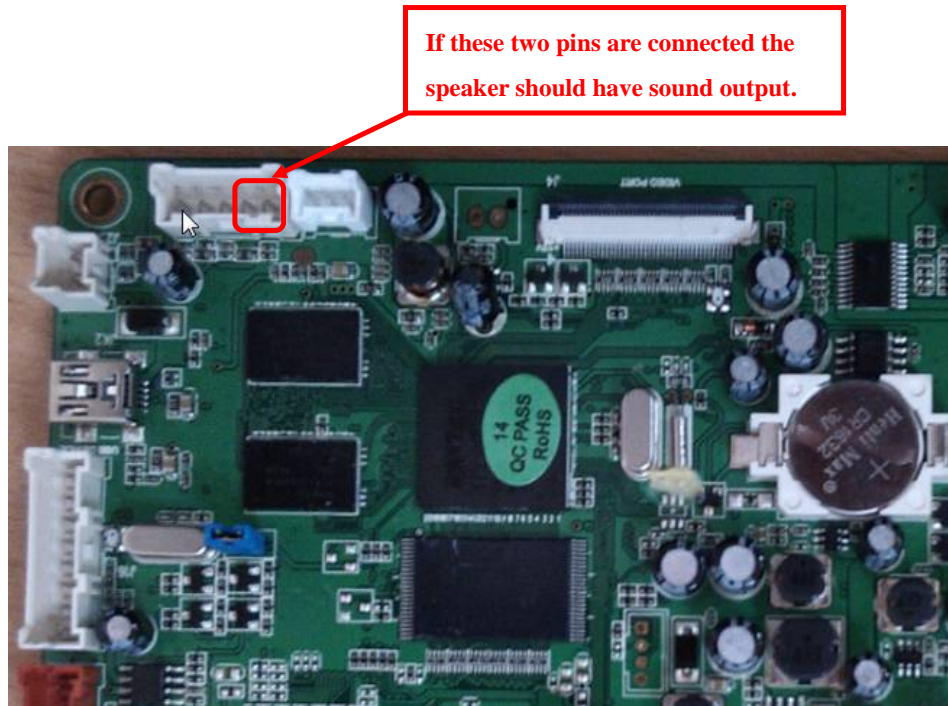

Short-circuit terminal
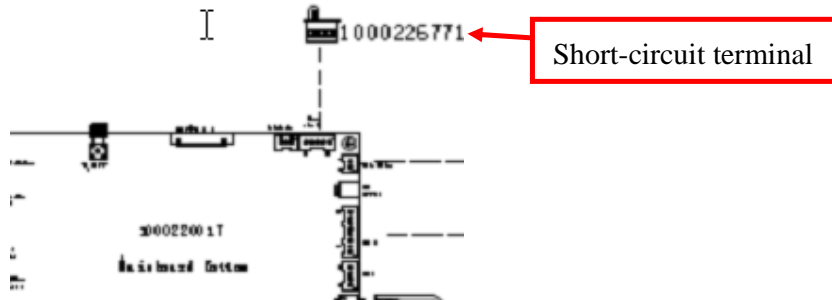
   c. If all are well-connected, update the OS, Software and IO Versions. If the problem persists, replace the UCB.

   3.8.2. Touch

   a. If the speaker has no sound output, confirm whether the speaker wire is well-connected with the UCB.

   b. If well-connected, use a multi-meter to confirm whether the audio output terminal switch is connected. Refer to the figure below:

If these two pins are connected the speaker should have sound output.

   c. If all wiring is well-connected, update the OS, Software and IO Versions. If the problem persists, replace the UCB.

   d. If the speakers have sound output, but headphones have no sound output, replace the headphone board. If the problem persists, replace the headphone wire.
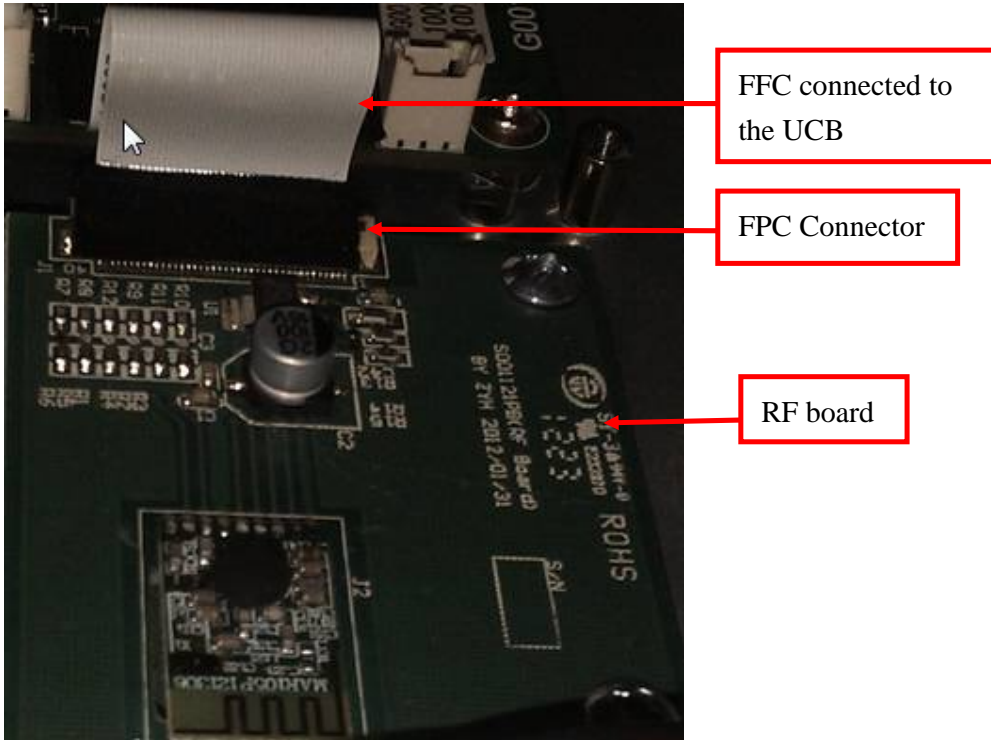
3.9 TROUBLESHOOTING –Radio Frequency Board Issues

1) **SYMPTOM:**

   a. The Radio Frequency (RF) board cannot connect with the Passport.

2) **SOLUTION:**

   a. Make sure that the RF and Passport connection key are functional (see Key Test in Section 2.3.5).   TM
      (STOP &   Incline+), EP (STOP & Resistance).

   b. Confirm again whether the FFC connect wire is damaged.

FFC connected to the UCB

FPC Connector

RF board

   c. If above connections are all confirmed ok, replace the RF board.

3.10 TROUBLESHOOTING – Virtual Active (VA) Issues

1) *SYMPTOM:*

    a. Cannot play the Virtual Active (VA) files.

2) *SOLUTION:*

    a. Confirm if the SD card is firmly seated on the UCB, if not, please re-insert the SD card and use

      adhesive tape to fix it in place.

No Good

OK

    b. If the SD card is inserted correctly, update the Software Versions.

    c. If the VA still cannot be played, replace the UCB.
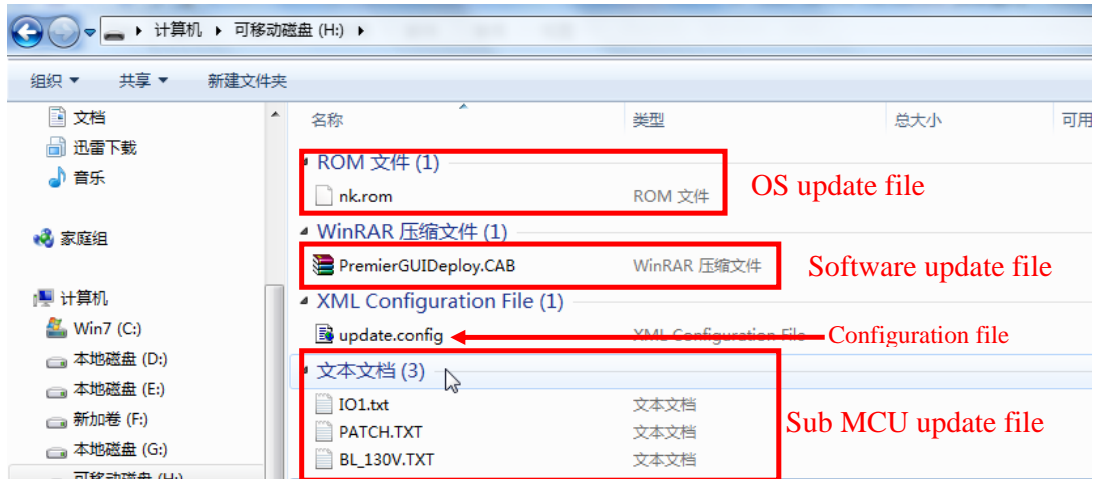
CHAPTER 4: Update OS & Software & IO

4.1 UPDATING OS, SOFTWARE, AND IO VERSIONS

4.1.1 Update File Description

OS Update File: NK.rom；

Elegant Console Update Software File: DeluxeGUIDeploy.CAB;

Touch Console Update Software File: PremierGUIDeploy.CAB

* Note: update the software after the OS is updated.

4.1.2 Update OS & Software

* Note: OS files need to distinguish between 7, 10, and 15 inch displays. The OS file names are the same.

1. Choose the correct OS nk.rom file according to the LCD size, and place the file on a USB flash drive.

2. Update the software version on the USB..

   - Elegant console choose "eluxeGUIDeploy.CAB".

   - Touch console choose "PremierGUIDeploy.CAB".

   * Note: The two files can not be placed together at the same time under the USB

3. Place the "updadte.config" file on the USB flash drive.

4. Start up the console, and insert the USB flash drive into the slot in the front of the console.   The files will update automatically.

4.2 UPDATING IO

   1. IO Update Files: BL_130.TXT, PATCH.TXT, and IO1.TXT.

   2. Place the three files above on the USB flash drive.

    * The name of the update file for the Elegant and Touch consoles are the same, no need to distinguish.

   3. Also place the "Update.config" file on the USB flash drive.

   4. Start up the console, and insert the USB flash drive into the slot in the front of the console.   The software will update automatically.