Marvotech

使用說明書

User's Manual

胎兒相機 M1

Fetus Camera Model M1

產品包裝內容物清單：

相機主機	1 臺	適配器	1 個
英標插脚	1 個	歐標插脚	1 個
美標插脚	1 個	USB 充電綫	1 根
使用説明書	1 本	快速操作指南	1 張
保修卡	1 張		

請確認包裝盒內物品是否齊全，如有遺漏，請聯系美童公司客服人員。

目　錄 >>>

1 安全説明

本儀器爲内部電源設備,電擊防護類型爲 BF 型應用部分。

爲避免可能受到的傷害,請在使用本儀器前認真閱讀以下安全説明。

安全提示符號説明

標　識	名　稱	説　明
⃠	禁止	應避免進行的行爲
⚠	小心	可能會對産品造成損壞或發生某些危險的行爲説明,請認真閱讀
💡	提示	操作、使用一般性提示説明

💡 請遵循相關國家或地區法律規定使用本産品。

💡 本産品適用對象爲懷孕 16 周以上(含 16 周)的孕婦。

💡 本産品僅用于孕婦腹部的胎兒掃描。

💡 本産品不能用于醫學診斷(如胎兒排畸檢查)。

⃠ 請不要將本産品用于新生兒。

⃠ 孕婦發熱生病期間請勿使用。

⃠ 本産品有使用頻率和單次使用時長要求,請嚴格按照説明書中描述的使用。

💡 本産品爲精密設備,請勿拆卸。

⚠ 請勿用力掰、壓手柄,以免損壞。

⚠ 本産品不完全防水,請勿把設備完全浸入水或其他液體中。

⚠ 請小心散熱孔濺入液體或其他异物。

⚠ 勿讓兒童操作或把玩設備,以免不慎摔壞設備或造成兒童

損傷。

⚠ 請保持設備的清潔,避免振蕩。

⚠ 確保本產品使用環境不受較强的電磁幹擾源,例如無綫發報機、微波爐、電磁爐等的幹擾。

⚠ 保持操作環境無震動、無腐蝕、無可燃物質,以及避免過高或過低的温度和濕度。

⚠ 若本儀器被濺濕或有水凝結,要停止操作。

⚠ 使用前,請檢查并確保設備没有明顯的損壞。

⚠ 本產品必須由經過授權的合格工程師維修。

⚠ 本產品在有效的生命期後,請返回給制造商循環利用并按當地規定進行處理。

2 產品簡介

胎兒相機 M1 是一款爲懷孕女性設計的全新概念的相機,用于給肚子裏的胎寶寶拍照和録制動態的影像視頻。

◆ 适用对象:怀孕 16 周以上(含 16 周)的女性
◆ 适用部位:怀孕女性腹部

胎兒相機 M1 由設備端(以下簡稱“相機主機”)和 APP 端(APP 名稱:胎兒相機)組成。相機主機采用超聲成像原理。它的核心是智能胎兒成像系統,負責發射和接收超聲波信號、信號轉換處理、數字化處理和三維重建處理等。相機主機輸出的圖像數據通過 Wi-Fi 傳輸到 APP 端顯示,在 APP 上進行存儲、瀏覽、社交分享等。

胎兒相機已通過以下認證和檢測:

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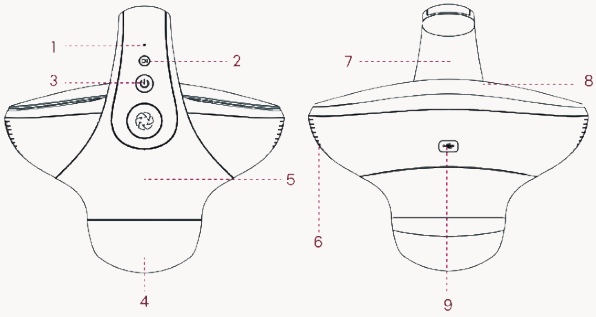
3 產品結構說明



1—— 連接指示燈

2—— 模式指示燈

3—— 電源按鍵（帶指示燈）

4—— 超聲傳感器

5—— 主機

6—— 散熱孔

7——L 型手柄

8—— 上蓋

9——Type–C USB 接口

4 開 / 關機和指示説明

指示燈顏色和狀態説明

指示燈	顏色和狀態	説明
電源指示燈	藍色常亮	電源充足或開機充電已滿
	紅色常亮	充電中 …
	紅色慢閃	電量≤ 20%
	紅色快閃	電量≤ 10%
	燈滅	關機或關機充電已滿
模式指示燈	綠色常亮	進入拍攝模式
	黃綠交替閃爍	開機中 …
	黃綠交替慢閃	睡眠中 …
	燈滅	關機
連接指示燈	紅藍交替閃爍	等待連接 …
	藍色常亮	連接成功
	燈滅	關機

開機:

長按電源鍵 3 秒,看到模式燈 “黃綠交替閃爍” 後鬆開手指,相機進入開機啓動程序,待三盞燈均亮起,表示相機開機成功。

關機:

長按電源鍵 3 秒,看到燈滅鬆開手指,相機關機。

開機後相機底部超聲傳感器會有一個自動校準操作，當相機長時間放置後開機，自動校準時間會延長，可能會聽到短暫的細微聲響，這是正常現象。

以下情況，相機會自動關機：

1）相機電量低至 5%；

2）不當使用導致相機温度達到 90℃預警值。

5 連接設備

胎兒相機與手機間采用 “點對點” 的 Wi–Fi 傳輸方式。

手機直接連接相機主機進行數據通信

相機開機後會廣播一個 Wi–Fi 熱點，手機連接該 Wi–Fi 熱點、APP 與設備建立連接後才可以進行拍照操作。

◆ Wi–Fi 热点名称：Marvoto_M1_******

◆ Wi–Fi 密码：12345678

連接操作步驟

1、使用前請檢查相機和手機電量，保證電量充足。

2、請確認手機是 iOS7.0 以上或 Android7.0 以上系統。

第 1 步安裝 “胎兒相機” APP

用瀏覽器掃描下方的二維碼或產品外包裝盒上的二維碼，下載安裝 “胎兒相機” APP。

iOS 用户可以直接在 APPStore 中輸入 “胎兒相機” 搜索下載。

Android 用户可以在 Googleplay、應用寶市場輸入 “胎兒相機” 搜索下載。

ANDROID APP ON Google play

Available on the App Store

第 2 步 注册、登録

打開 APP,進入注册頁面,選擇郵箱注册或手機號注册,按頁面指引完成注册登録。

第 3 步 添加設備

注册登録後進入首頁,點擊 “添加設備”,進入添加流程:

iOS 端用户按如下操作進行:

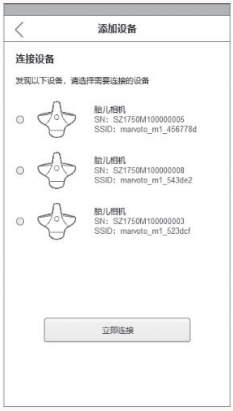
開機,確認紅藍燈交替閃爍後進入下一步

按提示去手機"設置→Wi-Fi"頁面連接"Marvoto_M1_"命名的Wi-Fi,密碼 12345678

返回APP,點擊首頁“連接”按鈕,連接成功後會看到“已連接”

Android 端用户按如下操作進行：

開機，確認紅藍燈交替閃爍後進入下一步



手機搜索到設備，選擇設備，點擊“立即連接”

連接成功

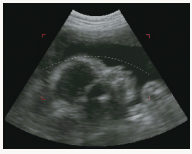
Android 用户點擊“去拍照”會進入拍照界面；iOS 用户點擊首頁“開始拍照”按鈕進入拍照界面。

手機連上胎兒相機後，手機將不能訪問互聯網，需要接入網絡的功能，比如 APP 內“分享”“提交”功能、手機上其他應用上網功能均無法使用，需要斷開與相機的連接、切換到正常 Wi–Fi 連接後才能訪問互聯網。

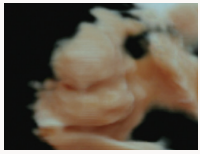
6 拍攝

胎兒相機有 “專業模式” 和 “高級模式” 兩種工作模式。

專業模式拍攝的是二維影像視頻,高級模式拍攝的是三維影像視頻。



專業模式拍攝的二維影像 —— 黑白扇形圖像



高級模式拍攝的三維影像 —— 真人膚色圖像

拍照準備:找一張舒服的沙發或床,孕媽媽半躺在沙發或床上。

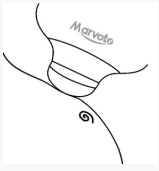
6.1 專業模式拍攝

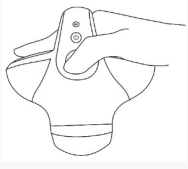
在扇形圖像上找到寶寶位置 → 轉動或傾斜相機,找到最佳拍攝角度 → 點擊 “録制” 録制二維影像視頻

第 1 步 塗抹耦合劑

擰開耦合劑蓋,擠壓耦合劑均勻塗抹在孕媽媽肚皮上。爲便于確認胎兒的位置,塗抹面積可以大一點。

第 2 步 把相機置于肚皮塗抹耦合劑處





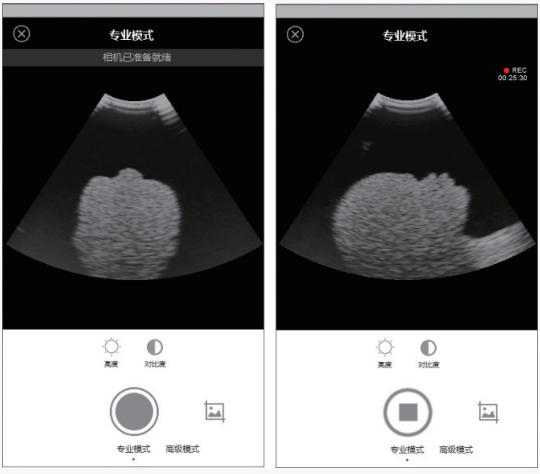
握持方式

輕輕按壓,使相機與腹部皮膚更好地貼合,有利于采集到更清晰的圖像。

第 3 步 緩慢移動相機,尋找寶寶位置

在黑白的扇形圖像上,位置合適時,相機放上去就可以看到小寶寶的影像。

爲獲取較佳的拍攝角度,需要慢慢轉換相機角度或移動相機位置。



旋轉前　　將相機旋轉 90 度後

嘗試調節亮度和對比度,以便獲取到明暗最佳、清晰的寶寶圖像。

第 4 步 點擊 “録制” 按鈕録制視頻

點擊界面下方 “◉” 按鈕開始録制二維影像視頻。

點擊 “⊡” 按鈕結束録制。點擊 “🖼” 按鈕截取并保存當前幀圖片到相册。

6.2 高級模式拍攝

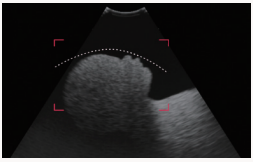
專業模式下點擊 “高級模式” 或向左滑動菜單區可切換到 “高級模式”。

高級模式首先看到的是一幅和專業模式一樣的黑白扇形圖像,因爲高級模式需要先在扇形圖像上 “取景” —— 找到寶寶位置、確定好拍攝角度、調好取景框,點擊 “拍攝” 才能處理生成三維影像視頻。

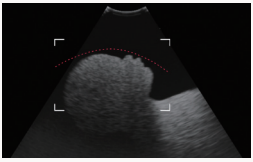
在扇形圖像上找到寶寶位置 → 調節取景框位置和大小 → 點擊 “拍攝” 進入實時三維視頻 → 録制視頻,旋轉、調節濾鏡、燈光至圖像最佳

第 1 步 找到寶寶,調節 “取景框” 至合適位置及大小

找到寶寶位置并調節好相機角度後,需要調節 “取景框”:



紅色取景框 —— 已激活,可以調節
白色虛綫 —— 不可以調節

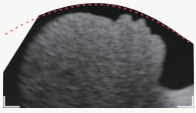


白色取景框 —— 不可以調節
紅色虛綫 —— 已激活,可以調節

取景框變爲 “紅色” 表示取景框已激活處于可調節狀態:

◆ 移动取景框:手指在图像区域移动,取景框会跟随移动;
◆ 缩放取景框:两指在屏幕上做缩放动作,取景框会跟随缩放。

取景框中間的虛綫是一條分割綫,取景框内虛綫以下的圖像區域將是三維影像所呈現的内容。



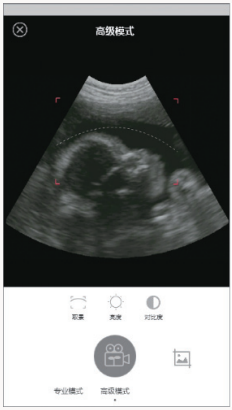
將生成三維影像的圖像區域,
框外的圖像不會生成三維圖像

點擊頁面下方的 “ ” 圖標，切換激活分割綫調節（連續點擊可切換激活 “取景框” 和 “分割綫” 調節）：

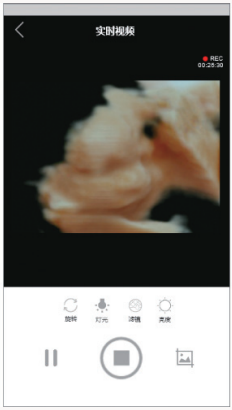
◆ 手指放在虚线上向上或向下滑动，虚线跟随向上或向下弯曲；
◆ 指放在虚线两端上滑 / 下滑，可移动端点位置。

第 2 步 w 點擊 “拍攝” 進入實時三維視頻

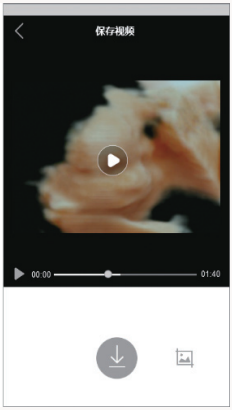
確定好拍攝角度及取景框位置和大小後，停止移動相機，維持當前的按壓力度，點擊頁面下方的㊗按鈕會處理生成寶寶的實時三維影像。點擊 “ ” 按鈕截取并保存當前幀圖片到相册。



高級模式準備



實時三維視頻



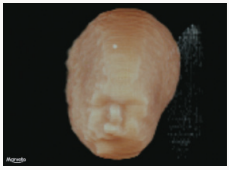
保存視頻

三維視頻圖像優化調節

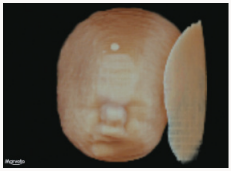
實時視頻頁面提供了旋轉、燈光、濾鏡調節。嘗試調節，有助于拍攝到較佳的三維影像。

1）濾鏡調節

嘗試滑動滑杆或點擊 “+” “–” 按鈕，三維照片上的圖像信息會跟隨變少或變多，調節濾鏡值至能看清拍攝目標。



濾鏡值太大,胎兒身體的部分數據被濾掉了



濾鏡值太小,多餘的幹擾信息太多

濾鏡值合適,胎兒清晰、飽滿,幹擾少

2)燈光

點擊“☼”圖標,三維圖像上會有燈光效果(類似攝影棚拍攝時的“打燈”),連續點擊,可切換不同方向的燈源。

第 3 步 點擊“結束録制”按鈕,結束録制

點擊頁面下方的“⊙”按鈕完成當前視頻録制并進入“保存”界面,點擊“⬇”保存視頻。

6.3 拍攝小課堂

☼耦合劑有什麽作用?

超聲耦合劑是一種以水爲主要成分制成的凝膠。在人體超聲檢查時,超聲探頭和皮膚之間的空氣會影響超聲波的發射–接收,塗抹耦合劑,可以使探頭和皮膚緊密貼合,排除空氣的影響,有利于采集到更清晰的圖像。耦合劑還可以使探頭更容易在皮膚表面滑動。

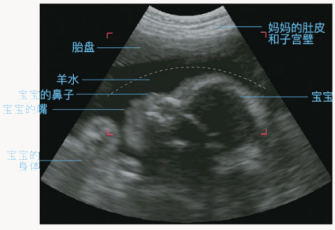
拍照結束後,用紙巾將肚皮和相機上的耦合劑擦除幹净即可。

看不懂扇形圖像上的內容?

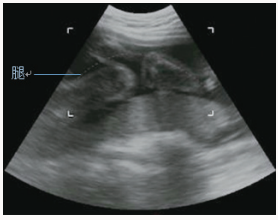
扇形圖像專業名稱叫 “二維圖像” 或 “切面圖像”,它是由一個個明暗不等的光點所組成的平面圖像。

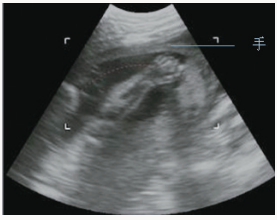
扇形圖像上越亮(顏色越白)的區域說明此處人體組織的超聲回波信號越强,越暗(顏色越黑)的區域超聲波回波信號越弱。

一般來說,人體的骨骼、血管壁、筋膜等在二維圖像上的影像會越亮,血液、羊水、尿液等液體在二維圖像上的影像是黑的,肌肉、肝臟等實質臟器或組織則是明暗不等的灰色影像。



以上圖爲例,這是一個 26W 左右寶寶的二維圖像,圖像上黑色比較幹净的區域是羊水,因爲羊水比較幹净,黑白對比分明,所以能够輕易地辨別出下方寶寶的頭。





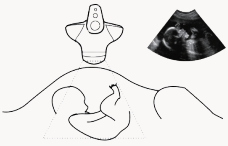
相對來說,寶寶的頭、手、脚或腿是比較容易辨別的,且二維圖像上寶寶是會動的,孕媽媽看幾次後,慢慢就會熟悉能够辨別出寶寶的頭、手和脚了。

扇形圖像一般怎麼拍?

相機放置角度輕微變化,扇形圖像顯示內容也會不一樣。

以拍攝寶寶的臉爲例,爲拍攝寶寶正臉的三維照片,需要拍攝到寶寶臉朝上的縱向切面圖像(就是拍寶寶的側臉)。

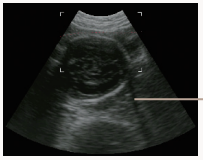
縱向切面圖



想象胎兒橫躺在你的面前,從胎兒頭部到臀部連綫,與該綫平行的平面圖像即是寶寶的縱向切面圖像。

上圖中,寶寶在媽媽肚子裏是頭朝下(頭朝向媽媽的腿,胎位是頭位),臉朝媽媽肚皮,這是理想的拍攝胎位。把相機竪着放置在媽媽的肚皮上,就能拍攝到寶寶的縱向切面圖像。

實際拍攝時,胎兒位置可能不是像上圖這樣,可以先找到胎兒頭部的形態,如下圖:



白色圓形、內部偏暗的區域就是寶寶的頭

然後旋轉或傾斜相機角度,就可以快速找到側臉位置,如下圖:

如果寶寶的臉朝向媽媽的背,把相機放到媽媽肚皮上時扇形圖像看到的是寶寶的背。這時把相機往媽媽身體兩側移動,可能拍攝到寶寶的一部分側臉。如果看不到寶寶的臉,那説明胎位不合適,衹能改天再拍了。

如何才能拍出寶寶面部的三維影像?

首先,寶寶的孕周大小要合適。

拍攝寶寶面部的最佳時間是懷孕 16W–35W,這時胎兒個頭還不算太大,子宮內羊水充足,透光性好,容易拍攝到比較清晰的寶寶的三維影像。

孕周太小時(孕 16W 以前),爲了寶寶的健康安全着想,盡量減少拍攝。

孕周太大時(孕 35W 以後),寶寶已經長大成型,子宮內羊水減少,透光性減弱,已經很難拍攝到寶寶的三維影像了。

其次,寶寶的胎位要合適。

理想的拍攝胎位是寶寶的臉朝向媽媽的肚皮;如果寶寶的臉朝向媽媽的背,則胎位不合適,很難拍到寶寶的臉。

第三,"取景" 很關鍵。

三維圖像內容是把連續多幀黑白的二維圖像經過三維重建算法處理而成。

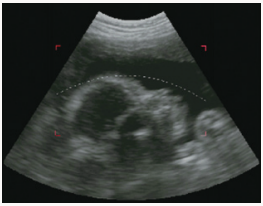
一張張黑白的二維圖像　　連續多張二維圖像構成三維圖像

所以三維圖像的內容直接由二維圖像上所呈現的內容決定。如果二維圖像角度不好或不清晰,三維圖像出來的內容也會不理想,所以二維圖像的 "取景" 很重要。

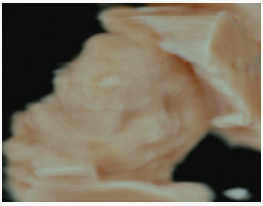
好的 "取景" 要滿足以下三個條件:

- 相機角度正確 —— 能在扇形圖像看到拍攝目標
- 羊水充足 —— 拍攝目標周圍有黑色的羊水區
- 取景框合理 —— 拍攝目標在取景框內、分割綫弧度貼合拍攝目標

寶寶臉的拍攝取景示例：



最佳取景角度示意圖



三維影像效果圖

最後，嘗試調節三維圖像參數。

調節三維圖像參數對拍攝三維影像很重要。一般可如下依次調節：

第一步 —— 旋轉圖像

嘗試旋轉圖像，有時稍微旋轉一下圖像方向，角度正確了，就能看懂圖像內容了。

第二步 —— 打開 “燈光” 效果

“燈光” 效果可以使寶寶五官立體感更强，有助于識別。嘗試調節不同方向光源至圖像上寶寶五官的立體感最佳。

第三步 —— 調節濾鏡

如果圖像上信息過多（肉色布滿圖像區），嘗試 “調高” 濾鏡值；

如果圖像上信息很少（肉色圖像幾乎看不到），嘗試 “調低” 濾鏡值；

拍寶寶的臉時，合適的濾鏡值使拍攝出的寶寶五官清晰飽滿。

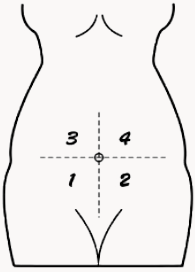
能否拍出寶寶的三維影像，受胎兒大小和體位、羊水多與少、胎動頻率等多方面因素影響，每個孕媽媽的情況都不一樣，如果拍出的照片效果不太好或者胎位不適合拍攝，孕媽媽可以活動一下或者換個時間再拍。

如何快速找到寶寶頭和手脚的位置?

利用胎位和胎動。

1)如果孕媽媽近期有去醫院産檢,可根據醫生告知的胎位,初步判斷胎兒頭部的位置,嘗試拍攝;

2)如果真的不知道該從肚子哪個部位開始,可按照如下方法查找:



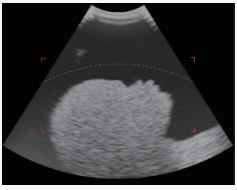
以肚臍爲中心點,將腹部分爲如圖所示四個區域,按1→2→3→4順序,先從下腹從右往左查找,如果未找到胎兒頭部,再從上腹從右往左查找。

3)想拍寶寶手脚的媽媽,感知寶寶的胎動在哪,把相機放到胎動的位置上,就很容易拍到寶寶的小手小脚了。

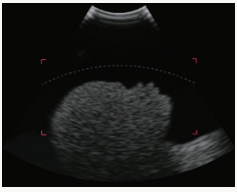
高級模式拍攝參數調節技巧

亮度和對比度調節

亮度合適、明暗對比明顯的二維圖像,會有利于拍攝出較好的三維影像。



亮度值太高



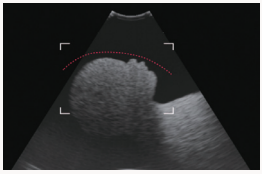
亮度值太低

一般來說,胎兒相機默認的亮度和對比度值能够適應大部分孕媽媽拍攝需要。

取景框調節

取景框和分割綫位置是拍攝實時三維視頻前必須確認的一項。

取景框太小,三維影像不能完整呈現拍攝目標;取景框太大,框住了太多人體組織,會幹擾拍攝目標呈現。調節取景框大小至框住拍攝目標即可。



分割綫調節

分割綫是爲了把拍攝目標上方多餘的幹擾信息排除(如媽媽的肚皮、子宮壁、胎盤等),使三維影像更清晰地呈現拍攝目標。

分割綫彎曲弧度盡量貼合拍攝目標,這樣可以最大程度把多餘的信息去除。

胎兒面部三維影像拍攝失敗常見原因

1)胎兒臉緊貼胎盤:胎兒臉緊緊地和胎盤貼住,臉與胎盤中間没有間隙,分割綫無法準確地分割臉部輪廓,導致三維影像模糊不清。

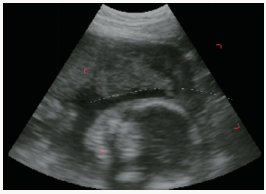
建議:

ⅰ走動:在自己能承受的範圍內,走動或爬樓梯來使寶寶轉動從而改變位置

ⅱ互動:輕拍肚子,與寶寶溝通,使其改變位置;

ⅲ調節參數:嘗試調節濾鏡或燈光效果看圖像是否有所改善。

2)胎兒臉部羊水不够:胎兒臉部到胎盤距離或羊水深度小于 1cm。因爲三維成像需要羊水的襯托,如果羊水不够會使面部成像不清晰。



建議:

ⅰ補充羊水:如果前期羊水不够,可以通過喝湯水等來補充一段時間,後期可能會拍出理想照片;

ⅱ調節參數:嘗試調節濾鏡或燈光效果看是否有所改善;

ⅲ改變拍攝角度:把相機放置到胎兒頭部周圍柔軟的位置,輕輕按壓或傾斜相機角度。

3)胎兒好動:前期取景框和分割綫定位完成,在三維成像期間胎兒動或轉會導致圖像模糊或看不清;

建議:孕媽媽静坐一段時間,通過安撫等方式讓寶寶平静。

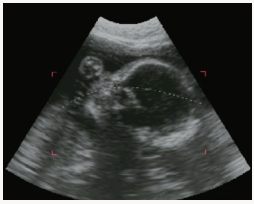
4)胎兒背對外面:如果胎兒腦後朝外(媽媽肚皮),即看不到面部。

建議:

ⅰ走動:在自己能承受的範圍內,走動或爬樓梯來使寶寶轉動從而改變位置

ⅱ互動:輕拍肚子,與寶寶溝通,使其改變位置。

5）胎兒面前有遮擋：胎兒臉前有手、脚或臍帶，拍出來的臉部圖片就會有手脚或臍帶遮擋，胎兒臉看不全或不清楚。



建議：

ⅰ走動：在自己能承受的範圍内，走動或爬樓梯來使寶寶轉動從而改變位置；

ⅱ互動：輕拍肚子，與寶寶溝通，使其改變位置。

6）胎兒月份太小：小于 16 周 ，胎兒還没有發育完全，成像後臉部模糊，不够立體；且該階段子宫内部空間足，胎兒動作多，較難捕捉到想要拍的部位。

建議：

ⅰ等待寶寶發育成熟再進行面部拍攝會取得更好效果；

ⅱ調節參數：嘗試調節濾鏡或燈光效果看圖像是否有所改善；

ⅲ改爲拍寶寶的手或脚，此時寶寶較小，可以拍攝到比較完整的四肢。

7）胎兒月份太大：大于 32 周，胎兒個頭變大，如果位置不理想，也不容易通過轉動改變位置；且大多數孕婦孕後期羊水逐漸減少，也會導致拍不清。

建議：

ⅰ嘗試走動或與寶寶互動，看是否能改變胎兒體位；

ⅱ調節參數：嘗試調節濾鏡或燈光效果看圖像是否有所改善。

相對來説，胎兒面部拍攝要求較高，如果拍不出理想的胎兒面部三維照片，可以改爲拍寶寶的手、脚或腿，或者改爲 “專業模式” 拍攝。

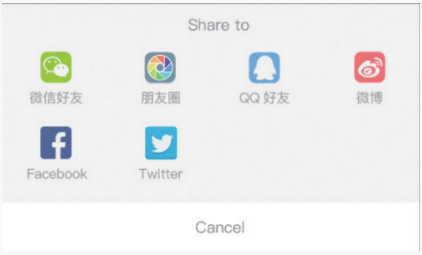
6.4 照片瀏覽、分享和美化

瀏覽照片

點擊首頁底部導航欄 “ ” 圖標切換到 “相册” 界面，可以瀏覽所有保存的照片。

分享照片

點擊照片縮略圖進入照片瀏覽界面，點擊頁面右上角的 “分享” 圖標，可將照片分享到微信好友、朋友圈、QQ 好友、新浪微博、Facebook 和 Twitter。



照片美化

拍攝中截取的三維影像照片可以選擇提交到美童雲服務器，由美童雲 Smart Photo 處理技術對照片進行優化處理。

美化前

美化後

購買相機的用户可享受一定數量的免費 “照片美化” 服務，超出約定範圍的照片美化服務可能需要收費，請以美童官方公布的信息爲準。

購買相機的用户可享受一定數量的免費“照片美化”服務,超出約定範圍的照片美化服務可能需要收費,請以美童官方公布的信息爲準。

6.5 使用頻率和使用時長

使用頻率:

◆ 在適用的孕周内(孕 16 周以上,含孕 16 周),建議每周使用不超過兩次;

◆ 兩次之間建議間隔 2–3 天。

單次使用時長:

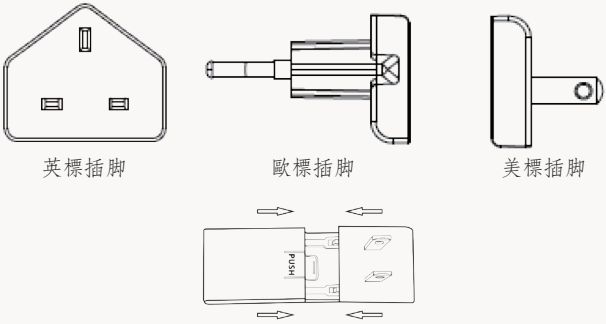
◆ 每次“實際使用時長”不要超過 10 分鐘。

◆ 實際使用時長:相機與孕媽媽肚皮實際接觸的時間總和。

7 充電

◆ 把插脚安装到适配器：

產品出廠配備了三個不同的插脚，請根據您所在區域的插座標準選擇對應的插脚：



◆ 把充电线一端插入相机的 Type-C USB 接口，充电线另一端接适配器插入外部电源插座。

◆ 正常充满一次电大约需要 2.5 小时。

充電注意事項：

◆ 充電過程中避免操作設備；

◆ 相機充電時會產生熱量，請保持充電環境通風、散熱良好；

◆ 如果相機充電時間顯著延長，可能是電池性能降低或故障，請聯系售後；

◆ 請使用原裝電源適配器充電，以免充電時設備發生意外。

8 固件升級

升級前請檢查相機和手機的電量,確保電量充足。

第 1 步 下載新固件版本

在“設備詳細信息”頁點擊“固件升級”進入“固件版本”頁面,點擊“下載固件”:

固件下載完成後,需要重新連接設備開始升級。

第 2 步 升級設備

連接設備後再次回到“固件版本”頁面,點擊“升級設備”按鈕進入升級流程:

請按頁面提示進行升級操作。

頁面提示 “升級成功” 後，請不要對設備進行任何操作，等待設備自行關機。關機完畢再次開機即可正常使用。

9 存放、清潔保養

日常存放和保護

◆ 相機屬于精密設備,没有使用時請把相機放回包裝盒内;

◆ 相機底部的傳感器屬于核心部件,注意不要受重擊、跌落等;

◆ 不要用尖銳物體劃 / 刺相機;

◆ 避免相機接觸腐蝕性有害物質;

◆ 避免散熱孔進水、灰塵、昆蟲等异物;

◆ 不要把相機放置在潮濕的環境中;

◆ 不要把相機放置在温度高于 55℃或低于 -20℃的環境中;

清潔保養

清潔工具:擦拭布、清潔劑、潔净水

清潔步驟:

◆ 清潔之前請關閉相機電源。

◆ 清潔灰塵:用清水潤濕擦拭布,擰幹水、輕輕地擦拭表面,再用幹擦拭布或紙巾把水分擦幹。

◆ 清潔污垢:用擦拭布沾取少量清潔劑,輕輕擦拭污垢區域,去除污垢後用清水潤濕擦拭布,擰幹水再輕輕擦拭一遍,最後用幹擦拭布或紙巾把水分擦幹。

◆ 清潔散熱孔:如有灰塵或异物堵塞散熱孔,請用棉簽或牙簽輕輕挑出。

充電注意事項：

- 不要將液體直接噴到相機上，以免液體進入相機內部；
- 不要用酒精、漂白劑、氯化銨混合物、過氧化氫等溶液擦拭底部傳感器；
- 不要接觸含礦物油或羊毛脂的溶液或耦合劑；
- 如不小心把液體濺入散熱孔，可用吹風機冷風檔吹幹。

10 故障排除

故障現象	解決方法
開機後三個指示燈沒有全部亮起	正常開機看到模式指示燈“黃綠交替閃爍”後等待幾秒連接指示燈會亮起，如開機後等待許久指示燈都不能正常亮起，請嘗試將設備關機重啓：長按設備“電源”鍵關機，等候 3 秒，再次長按“電源”鍵開機，看是否正常； 如還是异常，請聯系售後技術支持。
進入拍照界面没有扇形圖像顯示	1、點擊界面左上角“關閉”按鈕退回到首頁，看設備是否已連接上，如“未連接”請連接設備； 2、如設備已連接上，點擊“開始拍照”重新進入拍照界面看是否有扇形圖像顯示； 3、如“1”“2”所述操作均無效，嘗試進入手機系統任務管理器結束 APP 運行，再重新打開 APP →連接設備→進入拍照界面看是否有扇形圖像顯示； 4、如“1”“2”“3”所述操作均無效，嘗試將設備關機重啓：長按設備“電源”鍵關機，等候 3s 重新開機使用。
高級模式，點擊“3D”按鈕後實時三維視頻出不來	1、請確認設備和 APP 連接正常； 2、請點擊頁面左上角“關閉”按鈕退出拍照界面，嘗試重新拍攝； 3、如嘗試多次拍攝後還是没有“三維視頻”，請將設備關機重啓。

相機底部傳感器振動過大或發出异響	請停止使用設備,聯系售後技術支持。
相機插上適配器、接通電源後電源燈紅色快閃	正常情况插上適配器、接通電源後設備處于充電狀態,電源指示燈紅色常亮;如果電源燈“紅色快閃”,指示“充電异常”,請打開 APP、連接設備查看錯誤代碼,并聯系售後技術支持。

11 規格參數

產品名稱		胎兒相機
產品型號		M1
適配器	輸入	AC100–240V ~ , 50/60Hz, 1.2A Max
	輸出	DC 5.0V /3000mA or DC 9.0V /2000mA or DC12.0V /2000mA
電池	電池類型	可充電 Li– 聚合物電池
	電池容量	2300mAh
	電池標稱電壓	7.4V
	電池充電限制電壓	8.4V
尺寸與重量	產品尺寸	長 × 寬 × 高 約 161.5mm × 105mm × 153.5mm
	主機净重(含電池)	約 509g
	帶包裝重量	約 1235g
WiFi	WiFi 頻段	2.4G, 5G
使用時長(參考)	持續工作時長	1 小時
	待機時長	4 小時
	充電時長	2.5 小時
手機系統支持		iOS7.0 以上或 Android7.0 以上系統

12 聲輸出參數表

聲輸出參數表 (依據標準 IEC 61157–2007)

Parameter System settings Standard used: IEC 61157 Ed2	Mode B Focus:50mm scan angle:66° frequency:4.0MHz output power:100%
pr(MPa)	1.798
IIspta(mW/cm2)	11.26
Iob(mW/cm2)	3.30
Power output(mW)	18.23
Output beam dimensions (Ø) (mm)	39
zp(mm)	36
w12 (∥) (mm)	2.60
(⊥) (mm)	5.88
fawf(MHz)	3.603
prr(kHz)	4.098
srr(Hz)	21.93
ztt(mm)	—
zts(mm)	contact
Acoustic output freeze	—
Inclusive modes	—

Product package contents list:

Camera	1	Adapter	1
British standard pin	1	European standard pin	1
American standard pin	1	USB charging cable	1
User's Manual	1	Quick Operation Guide	1
Warranty card	1		

Please confirm that the contents of the package are complete. If there is any omission, please contact the customer service staff of Marvoto Company.

CONTENTS >>>

1 Safety Instructions

This instrument is an internal power supply device, of which the type of electric shock protection is BF type application part.

To avoid possible injury, please read the following safety instructions carefully before using this instrument.

Safety Alert Symbol Description

Symbol	Name	Description
	Prohibition	Behaviour that should be avoided
	Caution	Behaviour that may cause damage to the product or some danger. Please read carefully.
	Attention	General attention for operation and use

 Please use this product in accordance with the laws of the relevant country or region.

 This product is intended for women of pregnancy of 16 weeks and above.

 This product is only used for fetus scanning of the abdomen of pregnant women.

 This product cannot be used for medical diagnosis (e.g. fetus teratology examination).

 Please do not use this product for newborns.

 Do not use if pregnant women have fever and illness.

 This product has requirements on frequency of use and duration of a single time use, so please strictly follow the instructions described in the manual.

 This product is a precision device and should not be disassembled.

⚠ Do not break off or press the handle with force to avoid damage.

⚠ This product is not completely waterproof. Do not completely immerse the device in water or other liquids.

⚠ Be careful not let liquid or other foreign matter into the heat dissipation hole.

⚠ Do not allow children to operate or play with the device to avoid accidentally breaking the device or causing injury to children.

⚠ Please keep the device clean and avoid oscillation.

⚠ Ensure that the product's environment is not subject to strong electromagnetic interference sources such as wireless transmitters, microwave ovens, induction cookers, etc.

⚠ Keep the operating environment free from vibration, corrosion, flammable materials, and avoid excessive high or excessive low temperature and humidity.

⚠ If this instrument is splashed or has water condenses, stop operation.

⚠ Check and ensure that the device has no clear damage before use.

⚠ This product must be repaired by an authorized and qualified engineer.

⚠ After the product has expired, please return it to the manufacturer for recycling and handling according to local regulations.

2 Product Introduction

The Fetus Camera M1 is a new concept camera designed for pregnant women to take pictures and record dynamic video of fetus.

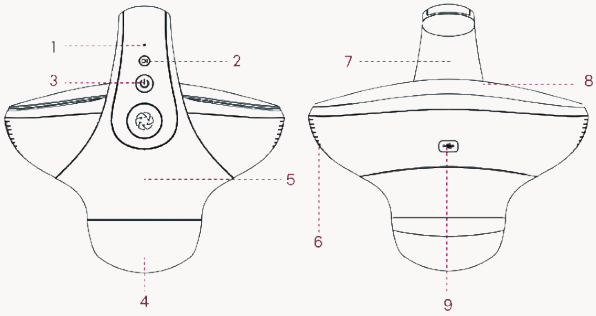
- Applicable to: women of pregnancy of 16 weeks and above
- Applicable parts: abdomen of pregnant women

The Fetus Camera M1 is composed of a device end (hereinafter referred to as "the camera main body") and an APP end (APP name: fetus camera). The camera main body uses the principle of ultrasound imaging. Its core is the Intelligent fetus imaging system, which is responsible for transmitting and receiving ultrasonic signals, signal conversion processing, digital processing and 3D reconstruction processing, etc. The image data output by the camera main body is transmitted to the APP for display via Wi-Fi, and stored, browsed, socially shared, etc., on the APP.

The Fetus Camera has passed the following certifications and tests:

CE ROHS

3 Product Structure Description



1——Connection indicator
2——Mode indicator
3——Power button (with indicator)
4——Ultrasonic sensor
5——Main body
6——Heat dissipation hole
7——L-shaped handle
8——Top cover
9——Type-C USB interface

4 On/Off and Instructions

Indicator Colour and Status Description

Indicator	Colour and Status	Description
Power Indicator	The blue light is always onw	The power is sufficient or the power is full at the status of turning on.
	The red light is always on	Charging…
	Slow red flash	Electricity ≤ 20%
	Fast red flash	Electricity ≤ 10%
	Light off	Turning off or the power is full at the status of turning off.
Mode indicator	The green light is always on	Advance mode/profession mode on
	Yellow and green lights are flashing alternately	Turning on…
	Yellow and green lights are flashing alternately and slowly	Sleeping…
	Light off	Turning off

Connection indicator	Red and blue lights are flashing alternately	Waiting for the connection...
	The blue light is always on	Connection succeeded
	Light off	Turning off

Turning on:

Press and hold the power button for 3 seconds, and release when the mode light "is flashing yellow-green alternately". The camera enters the turning-on program, and when the three lights are all on, the camera is turned on successfully.

Turning off:

Press and hold the power button for 3 seconds, and release when the light is off. The camera will be turned off.

After the power is turned on, the ultrasonic sensor at the bottom of the camera will have an automatic calibration. When the camera is turned on after being laid aside for a long time, the auto calibration time will be prolonged and a short subtle sound may be heard, which is normal.

The camera will automatically turn off in the following situations:

1)The camera's power is as low as 5%;

2)Improper use causes the camera temperature to reach the warning value of 90 °C.

5 Connecting devices

A "point-to-point" Wi-Fi transmission method is used between the Fetus Camera and the mobile phone.

The mobile phone is directly connected to the camera main body for data communication

After the camera is turned on, it will broadcast a Wi-Fi hotspot. You can start the photo shooting only when the mobile phone connects to such Wi-Fi hotspot and the APP establishes a connection with the device.

- Wi-Fi hotspot name: Marvoto_M1_******
- Wi-Fi password: 12345678

Connection procedure

1. Please check the camera and mobile phone power before use to ensure sufficient power.
2. Please confirm that the mobile phone's system is iOS7.0 or above or Android7.0 or higher.

Step 1 Install the "Fetus Camera" APP

Launch the mobile phone browser and scan the QR code below (or the QR code on the product packing box) to download and install the "Fetus Camera"

iOS users can enter the words "Fetus Camera" directly in the APPStore to search and download.

Android users can enter the words "Fetus Camera" in Googleplay and MyApp market to search and download.

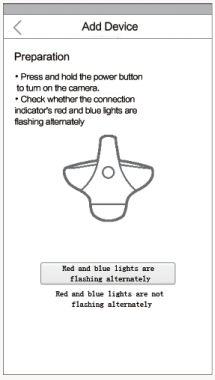
Step 2 Registration and login

Launch the APP and go to the registration page. Select the email registration or mobile phone number registration, and follow the page instructions to complete the registration and login.

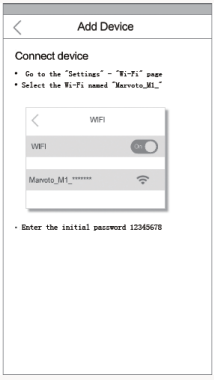
Step 3 Add a device

After registering and logging in, go to the homepage and click "Add Device" to enter the adding process:

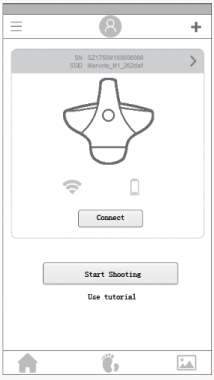
The iOS user shall operate as follows:



Turn ON the unit and enter the next step after the red and blue lamp alternately flashing.

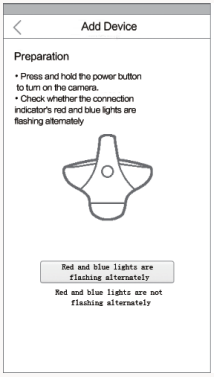


Enter "setting"—"Wi-Fi" page on the mobile phone. Find and connect to the WIFI named as "Marvoto_M1_" with the password 12345678.

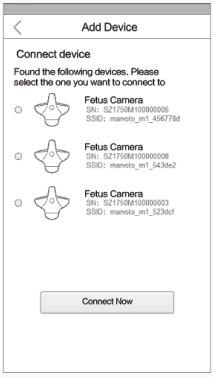


Open the APP once more. The page will show successful connection. Click "Next".

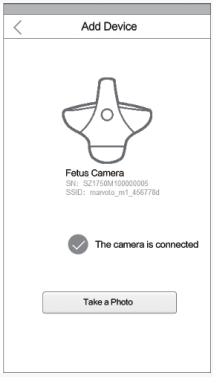
The Android user shall operate as follows:



Turn on the unit and enter the next step after the red and blue lamp alternately flashing.



When the mobile phone finds the device, select the device and click "Connect Now"



Connection succeeded

Android users click "Take a Photo" to enter the shooting interface; iOS users click "Start Shooting" button on the homepage to enter the shooting interface.

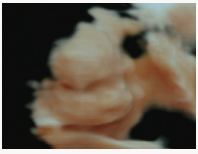
After the mobile phone is connected to the Fetus Camera, the mobile phone will not be able to access the Internet, so the functions that need to access the Internet cannot be used, such as the "Share" and "Submit" functions in the APP, as well as the Internet functions of other applications on the mobile phone. It is necessary to disconnect from the camera and switch to a normal Wi-Fi connection before you can access the Internet.

6 Shooting

The Fetus Camera has two modes of operation: "Professional Mode" and "Advanced Mode".

The professional mode captures 2D video and the advanced mode captures 3D video.

2D image taken in professional mode – black and white fan-shaped image



3D image taken in advanced mode – real person skin colour image

Photo shooting preparation: Find a comfortable sofa or bed and let the pregnant mother recline on the sofa or bed.

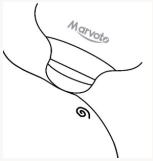
6.1Professional mode shooting

Find the fetus position on the fan-shaped image → Turn or tilt the camera to find the best shooting angle → Click "Record" to record 2D video

Step 1 Apply couplant

Unscrew the couplant cap and squeeze the couplant evenly onto the pregnant mother's belly. In order to confirm the position of the fetus, the application area can be larger.

Step 2 Place the camera on the belly where the couplant is applied



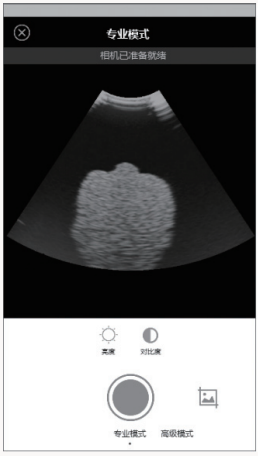
Holding method

Gently press to make the camera fit better with the abdomen skin, which helps to capture sharper images.

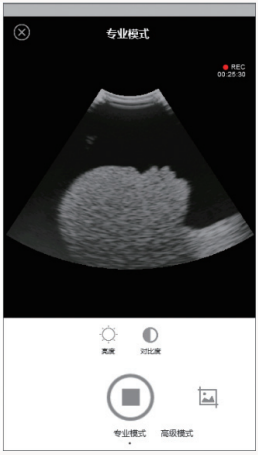
Step 3 Slowly move the camera to find the fetus' position

On the fan-shaped image in black and white, when the position is right, you can see the fetus' image when placing the camera onto the belly.

In order to get a better shooting angle, you need to slowly change the camera angle or move the camera position.



Before rotating



After rotating the camera 90 degrees

Try to adjust the brightness and contrast to get clear fetus image with the best brightness.

Step 4 Click the "Record" button to record the video.

Click the "◉" button at the bottom of the interface to start recording 2D video. Click the "◎" button to end the recording. Click the "🖼" button to capture and save the current frame image to the album.

6.2Advanced Mode Shooting

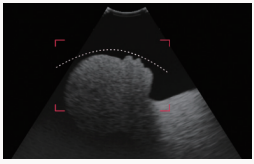
In the professional mode, click "Advanced Mode" or slide the menu area to the left to switch to "Advanced Mode".

In the advanced mode, you will first sees a black and white fan-shaped image that is the same as the professional mode, because the advanced mode needs to go through "framing" on the fan-shaped image first - find the fetus position, determine the shooting angle, adjust the finder frame, and click "Shooting" to process and generate 3D video.

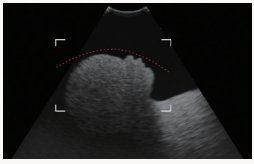
Find the fetus position on the fan-shaped image → Adjust the positionand size of the frame → Click "Shooting" to enter real-time 3D video → Record video, rotate, adjust filters and light to get the best image

Step 1 Find the fetus and adjust the "finder frame" to the right position and size

After finding the fetus' position and adjusting the camera angle, you need to adjust the "finder frame":



Red frame - activated and adjustable
White dotted line - cannot be adjusted



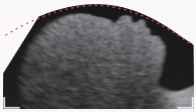
White frame - cannot be adjusted
Red dotted line - activated and adjustable

The finder frame changes to "red", indicating that the finder frame is activated in an adjustable state:

◆ Move the finder frame: Move the finger in the image area, and the finder frame follows the movement; ;

◆ Zoom the finder frame: Two fingers zoom on the screen, and the finder frame follows the zoom.

The dotted line in the middle of the finder frame is a split line, and the image area below the dotted line in the finder frame will be the content of the 3D image.



The image area where the 3D image will be generated and the image outside the frame will not generate a 3D image.

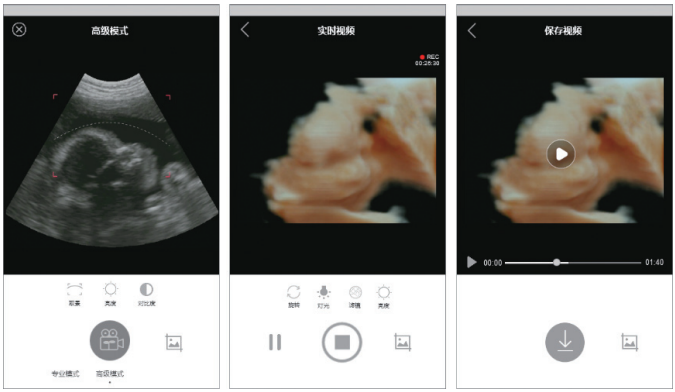
Click the "  " icon at the bottom of the page to switch and activate the split line adjustment (continuous click to switch the "finder frame" and "split line" adjustments):

◆ Slide up or down the finger on the dotted line, and the dotted line follows it to bend upward or downward;

◆ Slide the finger up/down on both ends of the dotted line to move the endpoint position.

Step 2 Click "Shooting" to enter real–time 3D video.

After determining the shooting angle and the position and size of the finder frame, stop moving the camera and maintain the current pressing force. Click the button at the bottom of the page to process and generate real-time 3D image of the fetus.



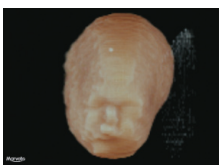
Advance Mode preparation　　Real-time 3D video　　Save the video

3D video image optimization adjustment

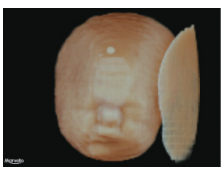
The real-time video page provides rotation, light, and filter adjustments. Try adjusting to help you get a better 3D image.

1) Filter adjustment

Try sliding the slider or clicking the "+" and "-" buttons. The image information on the 3D photo will follow the operation to become less or more, and adjust the filter value until you can see the subject clearly.



The filter value is too large and part of the fetus body's data is filtered out.



The filter value is too small, causing too much extra interference information

The filter value is right, so the fetus image is clear, full, and has less interference.

2) Lighting

Click the "☼" icon and there will be a light effect on the 3D image

(similar to "lighting" when shooting in the studio), and you can switch between the lights in different directions by clicking continuously.

Step 3 Click the "End Recording" button to end the recording.

Click the "" button at the bottom of the page to complete the current video recording and enter the "Save" interface, click "" to save the video.

6.3 Tips

What is the role of the couplant?

An ultrasonic couplant is a gel made of water as a main component. In the ultrasound examination of the human body, the air between the ultrasonic probe and the skin affects the emission-reception of the ultrasonic wave, therefore the couplant is applied to make the probe and the skin closely fit, and the influence of the air is excluded, which is helpful for collecting clearer images. The couplant also makes it easier for the probe to slide over the skin surface.

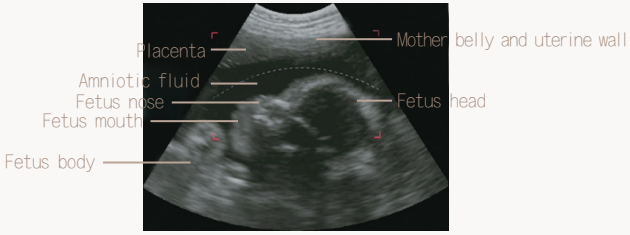
After the photo is taken, wipe off the couplant on the belly and the camera with a paper towel.

Can't read the content on the fan–shaped image?

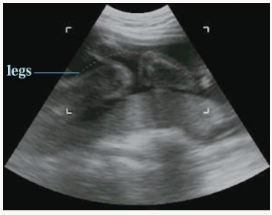
The fan-shaped image has a professional name as "two-dimensional image" or "section image", which is a flat image composed of many light spots of different brightness.

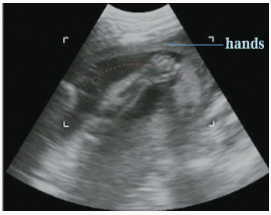
The brighter the area on the fan-shaped image (the whiter the colour), indicating the stronger the ultrasonic echo signal of the human tissue, and the darker the area (the darker the colour), indicating the weaker the ultrasonic echo signal.

In general, the image of the human body's bones, blood vessel walls, fascia, etc., will be brighter on a two-dimensional image. The images of blood, amniotic fluid, urine and other liquids on a two-dimensional image are black, and the muscles, liver and other parenchymal organs or tissues are gray images of varying brightness.



Taking the above picture as an example. This is a two-dimensional image of a fetus of about 26 weeks. The clear black area on the image is amniotic fluid. Because the amniotic fluid is relatively clean and the black and white contrast is clear, the fetus head at the bottom can be easily identified.





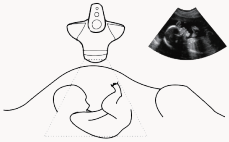
Relatively speaking, the fetus' head, hands, feet or legs are relatively easy to distinguish, and the fetus is moving on the two-dimensional image. After seeing several times, the pregnant mother will gradually become familiar with the fetus' head, hands and feet.

How do you shoot a fan–shaped image?

The camera placement angle changes slightly, and the fan-shaped image display content will be different.

Taking the shooting of fetus face as an example, in order to take a three-dimensional front photo of the fetus face, it is necessary to take a longitudinal section image of the fetus face upward (that is, taking the fetus' side face).

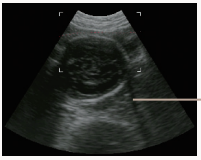
Longitudinal section image



Imagine the fetus lying in front of you and connect the fetus head to the buttocks. The plane image parallel to the line is the fetus' longitudinal section image.

In the picture above, the fetus is head down in the mother's stomach (head facing the mother's leg, the fetus position is the head position), and the face is towards the mother's belly, which is an ideal position to shoot. By placing the camera upright on the mother's belly, you can get the fetus' longitudinal section image.

In actual shooting, the fetus position may not be like the above picture, so you can first find the shape of the fetus head, as shown below:



The white round area with dark interior is the fetus head

Then rotate or tilt the camera angle to quickly find the side face position, as shown below:

If the fetus face is facing the mother's back, the fan-shaped image shows the fetus' back when the camera is placed on the mother's belly. At this time, move the camera to the sides of the mother's body, and a part of the fetus' side face may be photographed. If you can't see the fetus face, it means that the fetus position is not suitable, and you can only shoot again in another time.

How can I take a 3D image of the fetus face?

First of all, the pregnancy weeks should be appropriate.

The best time to take image of the fetus face is pregnancy of 16W-35W. At this time, the fetus head is not too big, while the amniotic fluid in the uterus is sufficient, and the light transmission is good. Thus it is easy to take a clear three-dimensional image of the fetus.

When the pregnancy week is too small (before 16W), for the sake of your fetus' health and safety, try to reduce the shooting times.

When the pregnancy week is too large (after 35W), the fetus has grown up, while the amniotic fluid in the uterus is reduced and the light transmission is weakened. Thus it is difficult to capture the fetus' three-dimensional image.

Second, the fetus position should be appropriate.

The ideal position for shooting is that the fetus face is facing the mother's belly; if the fetus face is facing the mother's back, the fetus position is not suitable, and it is difficult to photograph the fetus face.

Third, "framing" is critical.

The three-dimensional image content is generated by processing a black and white two-dimensional image of continuous multi-frames through a three-dimensional reconstruction algorithm.

Many two-dimensional images of black and white

Continuously multiple 2D images form a 3D image

Therefore, the content of the three-dimensional image is directly determined by the content presented on the two-dimensional image. If the angle of the two-dimensional image is not good or not clear, the content of the three-dimensional image will not be ideal, so the "framing" of the two-dimensional image is very important.

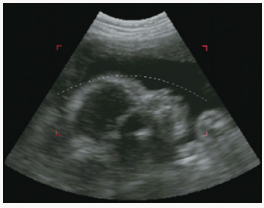
A good "framing" should meet the following three conditions:

◆ The camera angle is correct – you can see the subject in the fan-shaped image;

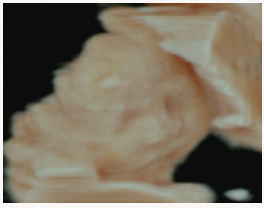
◆ Ample amniotic fluid – black amniotic fluid area around the shooting subject;

◆ The finder frame is reasonable – the shooting subject is in the finder frame, and the split line is curved to fit the shooting subject.

Example of shooting a fetus face:



Optimum viewing angle sketch



Three-dimensional image rendering

Schematic diagram of best view angle

Finally, try to adjust the 3D image parameters.

Adjusting 3D image parameters is important for capturing 3D images. Generally, it can be adjusted as follows:

Step 1 - Rotate the image

Try to rotate the image. Sometimes just rotating the image direction slightly, the angle will be correct, and you can understand the image content.

Step 2 - Turn on the "light" effect

The "light" effect can make the fetus' facial features more solid and help to identify. Try to adjust the light source from different directions until you get the best three-dimension effect of the fetus' facial features on the image.

Step 3 - Adjust the filter

If there is too much information on the image (the flesh colour is full of

image area), try to "turn up" the filter value;

If there is little information on the image (the flesh-coloured image is barely visible), try to "turn down" the filter value;

When shooting the fetus face, the appropriate filter value can make the fetus' facial features clear and full.

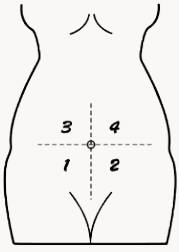
Whether you can take the fetus' three-dimensional image, there are many factors such as the size and position of the fetus, more or less amniotic fluid, frequency of fetus movement, etc. The situation of each pregnant mother is different, so if the photo taken is not very good or the fetus position is not suitable for shooting, the pregnant mother can move a little bit or take another time to shoot.

How to quickly find the position of the fetus'head, hands and feet?

Use fetus position and fetus movement.

1) If the pregnant mother has recently gone to the hospital for a check-up, you can initially determine the position of the fetus head according to the fetus position notified by the doctor and try the shooting;

2) If you really don't know which part of the stomach to start with, you can find it as follows:



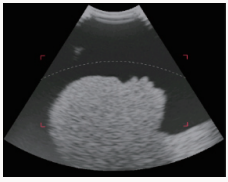
Taking the navel as the centre point, and divide the abdomen into four areas as shown in the figure. Following the order of 1 → 2 → 3 → 4, first look from right to left of the lower abdomen. If the fetus head is not found, then look from the right to the left of the upper abdomen.

3) The mother who wants to take a photo of the fetus' hands and feet, just feel the fetus' fetus movement, and put the camera in the position of the fetus movement, then it is very easy to get an image of the fetus' small hands and feet.

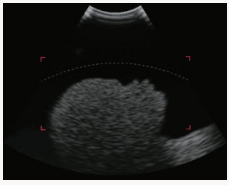
Advanced mode shooting parameter adjustment technique

Brightness and contrast adjustment

A two-dimensional image with appropriate brightness and obvious contrast between light and dark will help to capture better 3D images.



Brightness value is too high



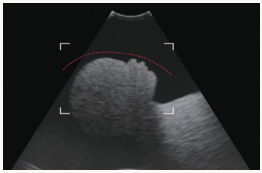
Brightness value is too low

In general, the default brightness and contrast values of the Fetus Camera can be adapted to the needs of most pregnant mothers.

Finder frame adjustment

The finder frame and split line position must be confirmed before shooting real-time 3D video.

If the finder frame is too small, the 3D image cannot fully present the shooting subject; if the finder frame is too large and too many human tissues are framed, it may interfere with the presentation of the shooting subject. You can just adjust the size of the finder frame to frame the subject.



Split line adjustment

The split line is to exclude the extra interference information above the shooting subject (such as the mother's belly, uterine wall, placenta, etc.), so that the three-dimensional image can show the shooting subject more clearly.

The split line curvature should fit the shooting subject as close as possible, so that the excess information can be removed to the utmost extent.

Common causes of failure of fetus facial 3D image capture

1) The fetus face is close to the placenta: the fetus face is tightly close to the placenta, and there is no gap between the face and the placenta. The split line cannot accurately divide the contour of the face, resulting in a blurred three-dimensional image.

Advice:

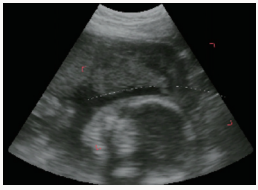
i.Walk around: Move or climb the stairs within the range that you can afford to make the fetus turn and change position;

ii.Interaction: Pat the belly gently and communicate with the fetus to make he/her change position;

iii.Adjust parameters: Try adjusting the filter or light effect to see if the image has improved.

2) Insufficient amniotic fluid in the face of the fetus: the distance from the face to the placenta of the fetus or the depth of the amniotic fluid is less than 1 cm.

Because three-dimensional imaging requires the setting of amniotic fluid, if the amniotic fluid is not enough, the facial imaging will be not clear.



Advice:

i.Supplement amniotic fluid: If the amniotic fluid is not enough in the

early stage, you can supplement it for a while by drinking soup, etc., and you may take an ideal photo later;

ii.Adjust parameters: try to adjust the filter or light effect to see if there is improvement;

iii.Change the shooting angle: Place the camera in a soft position around the fetus head and gently press or tilt the camera angle.

3) The fetus is too active: when the positioning of the finder frame and the split line is completed in the early stage, if the fetus moves or turns during the three-dimensional imaging, it may result in blurred or invisible images;

Advice: The pregnant mother can sit for a while and calm the fetus by appeasement, etc.

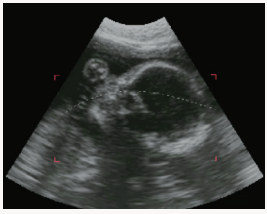
4) The fetus is facing away from the outside: If the fetus head back is facing outward (mother's belly), the face is not visible.

Advice:

i.Walk around: Move or climb the stairs within the range that you can afford to make the fetus turn and change position;

ii.Interaction: Pat the belly gently and communicate with the fetus to make him/her change position.

5) There is occlusion in front of the fetus: when there is a hand, foot or umbilical cord in front of the fetus, the face picture taken will be blocked by hands and feet or the umbilical cord. Thud the fetus face will be not full or unclear.



Advice:

i.Walk around: Move or climb the stairs within the range that you can afford to make the fetus turn and change position;

ii.Interaction: Pat the belly gently and communicate with the fetus to make him/her change position.

6) The fetus month is too small: less than 18 weeks and the fetus is not fully developed, so the face is blurred and not 3D enough after imaging; in addition, the internal space of the uterus is sufficient at this stage and the fetus movement is more, so it is difficult to capture the part that you want to shoot.

Advice:

i.Wait for the fetus to mature and then take a face shot to get better results;

ii.Adjust the parameters: Try to adjust the filter or light effect to see if the image is improved;

iii.Change to shoot the fetus' hand or foot. At this time, the fetus is smaller so you can shoot more complete limbs.

7) The fetus month is too large: more than 32 weeks and the fetus head becomes larger. If the position is not ideal, it is not easy to change the position by turning; moreover, most of the pregnant women gradually reduce the amniotic fluid during the post-conceptual age, which may lead to unclear shooting.

Advice:

i.Try to move around or interact with the fetus to see if it can change the position of the fetus;

ii.Adjust the parameters: Try to adjust the filter or light effect to see if the image is improved.

Relatively speaking, the fetus facial shooting requirements are higher. If you can't shoot the ideal three-dimensional photo of the fetus face, you can shoot the fetus' hand, foot or leg, or change to "professional mode".

6.4Photo Browsing, Sharing and Beautifying

Browse photo

You can browse all saved photos by clicking the "" icon at the bottom of the homepage to switch to the "Album" interface.

Share photo

Click on the photo thumbnail to enter the photo browsing interface. Click the "Share" icon in the upper right corner of the page to share the photo through WeChat, Friends Circle, QQ, Sina Weibo (MicroBlog), Facebook and Twitter.

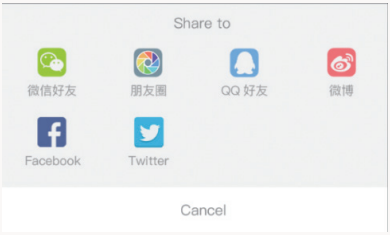


Photo beautification

The 3D image captured during the shooting can be submitted to the Marvoto cloud server, which will be optimized and processed by Marvoto Cloud IntelligentPhoto processing technology.

Before beautification

After beautification

Users who purchase the camera can enjoy a certain number of free "photo beautification" services. Photo beautification services beyond the agreed range may be charged. Please refer to the information officially published by Marvoto.

6.5Frequency and Duration of Use

Use frequency:

◆ Within the applicable pregnancy weeks (pregnancy of 16 weeks and above), it is recommended to use no more than twice a week;

◆ The recommended interval between two usages is 2-3 days.

Single use duration:

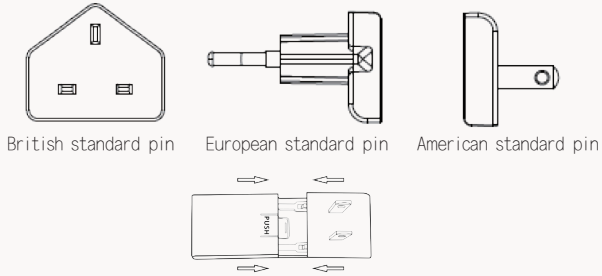
◆ Do not exceed 10 minutes for each "real use time".

◆ Actual use duration: The sum of the actual time that the camera is in contact with the pregnant mother's belly.

7 Charging

◆ Install the pin to the adapter:

The product is accompanied with three different pins, so please select the corresponding pin according to the socket standard in your area:



◆ Plug one end of the charging cable into the camera's Type-C USB connector, and the other end of the charging cable into the external power outlet.

◆ Normally it takes approximately 2.5 hours to complete a single full charge.

Charging precautions:

◆ Avoid operating the device during charging;

◆ The camera generates heat during charging. Please keep the charging environment ventilated with good heat dissipation;

◆ If the camera's charging time is significantly longer, it may be due to poor battery performance or malfunction, please contact our after-sales;

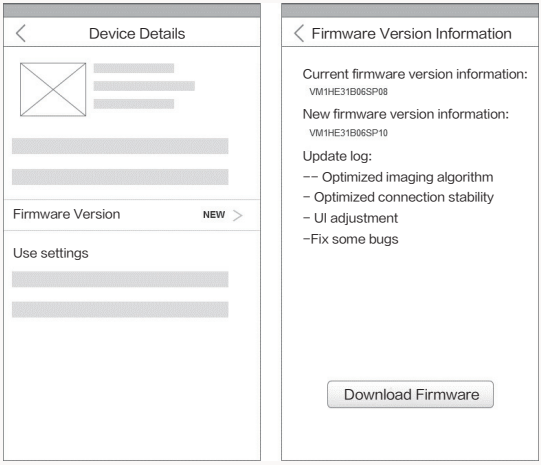
◆ Use the original power adapter to charge to avoid accidents when charging.

8 Firmware Upgradew

Check the power of your camera and mobile phone before upgrading to make sure it is fully charged.

Step 1 Download the new firmware version

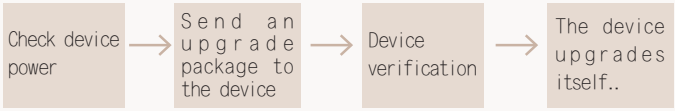
Click "Firmware Upgrade" on the "Device Details" page to enter the "Firmware Version" page, and click "Download Firmware":



After the firmware download is complete, you need to reconnect the device to start the upgrade.

Step 2 Upgrade the device

After connecting the device, go back to the "Firmware Version" page and click the "Upgrade Device" button to enter the upgrade process:



Please follow the instructions on the page to upgrade.

After the page prompts "Upgrade Successful", please do not perform any operations on the device and wait for the device to turn off itself. After the turning off is completed, it can be turned on again and used normally.

9 Storage, Cleaning and Maintenance

Daily storage and protection

◆ The camera is a precision device. When not in use, please put the camera back in the packing box;

◆ The sensor at the bottom of the camera is a core component, so please take care not to let it be hit, dropped, etc.

◆ Do not scratch/pierce the camera with sharp objects;

◆ Avoid contact with corrosive harmful substances;

◆ Avoid foreign matter such as water, dust, insects, etc., into the heat dissipation hole;

◆ Do not leave the camera in a damp environment;

◆ Do not place the camera in an environment where the temperature is above 55°C or below -20°C.

Cleaning and maintenance

Cleaning tools: wiping cloth, detergents, clean water

Cleaning steps:

◆ Turn off the camera before cleaning;

◆ Clean the dust: Moisten the wiping cloth with water, and wring the water out to gently wipe the surface, and then wipe the water with a dry wiping cloth or paper towel;

◆ Clean the dirt: Dip a small amount of detergent with a wiping cloth, and gently wipe the dirt area. After removing the dirt, moisten the wiping cloth with water, and wring the water out to gently wipe again, and then wipe the water with a dry wiping cloth or paper towel;

◆ Clean the heat dissipation hole: If dust or foreign matter blocks

the heat dissipation hole, gently pick them out with a cotton swab or toothpick.

Cleaning precautions:

- Do not spray liquid directly onto the camera to prevent liquid from entering the inside of the camera;
- Do not wipe the bottom sensor with alcohol, bleach, ammonium chloride mixture, hydrogen peroxide, etc.
- Do not touch solutions or couplants containing mineral oil or lanolin;
- If you accidentally spill liquid into the heat dissipation hole, use an air blower to blow dry (with cold air).

10 Troubleshooting

Fault	Solution
The three indicators are not all lit up after power on	After normal turning on, the mode indicator will have "yellow and green light flashing alternately". Wait for a few seconds and the connection indicator will light up. If the connection indicator light does not light up after waiting for a long time, please try to turn the device off and restart: press and hold the device "Power" button to tune off the camera and wait for 3 seconds, then press and hold the "Power" button again to see if it is normal; If it is still abnormal, please contact our after-sales for technical support.
No fan-shaped image display after entering the camera interface	1. Click the "Close" button in the upper left corner of the interface to return to the homepage to see if the device is connected. If it shows "Not Connected", please connect the device; 2. If the device is connected, click "Start Shooting" to re-enter the camera interface to see if there is a fan-shaped image display; 3. If the operations described in "1" and "2" are not effective, try to enter the mobile phone system task manager to end the APP operation, then re-launch the APP ⟶ connect the device ⟶ enter the camera interface to see if there is a fan-shaped image display; 4. If the operations described in "1", "2" and "3" are all not effective, try to turn off the device and restart: press and hold the "Power" button to turn off the device and wait for 3 seconds to restart.

In advanced mode, click on the "" button but real-time 3D video cannot display	1. Please confirm that the device and APP are connected properly. 2. Please click the "Close" button in the upper left corner of the page to exit the camera interface and try to shoot again. 3. If there is still no "3D Video" after trying multiple shots, please turn off the device and restart.
The sensor at the bottom of the camera vibrates too much or makes an abnormal sound	Please stop using the device and contact our after-sales for technical support.
When the camera is plugged in with adapter and powered on, the power light flashes red quickly	Normally, after the adapter is plugged in and the power is on, the device is in the charging state, and the red light of the power indicator is always on; if the power light is "flashing red quickly", indicating "charging abnormality", please launch the APP and connect the device to check the error code, and contact our after-sales for technical Support.

11 Specifications

Product name		Fetus Camera
Product model		M1
Adapter	Input	AC100-240V~, 50/60Hz, 1.2A Max
	Output	DC 5.0V /3000mA or DC 9.0V /2000mA or DC12.0V /2000mA
Battery	Battery type	Rechargeable Li-polymer battery
	Battery capacity	2300mAh
	Battery nominal voltage	7.4V
	Battery charge limit voltage	8.4V
Size and weight	Product size	Length × width × height about 161.5mm×105mm×153.5mm
	Main body net weight (with battery)	About 509g
	Weight with package	About 1235g
WiFi	WiFi band	2.4G, 5G
Use duration (reference)	Continuous working hours	1hours
	Standby duration	4hours
	Charging duration	2.5hours
Mobile phone system support		iOS7.0 above or Android7.0 above systems

12 Acoustic Output Parameter Table

Acoustic Output Parameter Table

(According to the standard IEC 61157–2007)

Parameter System settings Standard used: IEC 61157 Ed2	Mode B Focus:50mm scan angle:66° frequency:4.0MHz output power:100%
pr(MPa)	1.798
IIspta(mW/cm2)	11.26
Iob(mW/cm2)	3.30
Power output(mW)	18.23
Output beam dimensions (Ø) (mm)	39
zp(mm)	36
w12 (∥) (mm)	2.60
(⊥) (mm)	5.88
fawf(MHz)	3.603
prr(kHz)	4.098
srr(Hz)	21.93
ztt(mm)	—
zts(mm)	contact
Acoustic output freeze	—
Inclusive modes	—