Fire Control Unit Instructions (REV 3.0+)

火控單元使用說明（REV 3.0+）

BATTERY | 電池

The Fire Control Unit can be powered from battery packs between 7.4v and 10.8v. This includes common airsoft battery packs as well as small (<300mAh) lithium polymer packs. 7.4v and 8.4v battery packs are recommended since there are no benefits to using a higher voltage. Alkaline batteries (including 9V batteries) should not be used as they do not meet the minimum continuous current rating of at least 1A and will lead to malfunction.	火控單元可使用 7.4V 至 10.8V 的電池供電，包含常見的氣槍電池組以及小容量（小於 300mAh）的鋰聚合物電池。建議使用 7.4V 或 8.4V 電池，因為使用更高電壓並無任何效能優勢。請勿使用鹼性電池（包含 9V 電池），因其無法提供至少 1A 的連續電流，將導致系統異常或故障。
THE FCU WILL CONTINUE TO DRAW POWER FOR AS LONG AS THE BATTERY REMAINS CONNECTED.	只要電池仍保持連接，FCU 就會持續耗電。
ALWAYS DISCONNECT THE BATTERY AFTER USE TO PEREVENT THE BATTERY FROM DISCHARGING COMPLETELY.	使用後請務必斷開電池連接，以避免電池完全放電。

PROGRAMMING - BASIC OVERVIEW | 設定模式－基本說明

To enter programming mode, press inward on the programming button. The display will show the firmware revision (e.g. rE 3.0) and the programming indicator will turn on. When the programming indicator is on the trigger is disabled and the system is in programming mode. Press the programming button again to exit programming mode. Setting changes are automatically saved upon exiting. While in programming mode the various settings may be accessed by pushing the programming button left or right. The values are changed by pushing the button up or down.	進入設定模式：向內按下設定按鈕。螢幕會顯示韌體版本（例如 rE 3.0），並亮起設定指示燈。當設定指示燈亮起時，扳機會被鎖定，系統進入設定模式。再次按下設定按鈕即可離開設定模式；離開時所有設定變更會自動儲存。在設定模式中，可透過左右切換各項設定；以上下調整數值。
The FCU may be returned to the factory defaults by holding in the programming button while plugging in the battery.	恢復出廠預設：插入電池時同時按住設定按鈕，即可將 FCU 恢復為出廠預設值。
Firmware Revision (e.g. rE3.0) - This is not a user setting, but instead displays the firmware revision of the FCU. Pressing up or down on the programming button will display the upper or lower four (4) digits of	韌體版本（例如 rE3.0）：此項非使用者可調設定，僅用於顯示 FCU 的韌體版本。於此畫面時，按下設定按鈕的上/下，可顯示 FCU 射擊計數器的高/低四（4）位數；該數值以十六進位顯示。

the FCU shot counter. This value is displayed in hexadecimal format.	
FCU Mode (FC) - As of revision 1.0 the FCU can control both dual solenoid (Fusion Engine & F2) and single solenoid (F1 & JACK) systems. This setting (FE or F1) determines which system the FCU is controlling and which system-specific settings are visible in the menu. Some settings are global and apply to both modes while others are specific to either the FE or F1 mode.	FCU 模式（FC）：自版本 1.0 起，FCU 可同時控制雙電磁閥系統（Fusion Engine 與 F2）以及單電磁閥系統（F1 與 JACK）。此設定（FE 或 F1）決定 FCU 正在控制的系統類型，以及選單中會顯示哪些系統專屬設定。有些設定為通用，適用於兩種模式；其他則僅適用於 FE 或 F1 模式。
Rate of Fire (rF) - The ROF variable sets the cyclic rate of the system. The value on the display is the desired cyclic rate in Rounds per Second. If the FCU calculates that the set cyclic rate is too high to achieve based on other settings then it will automatically use the calculated maximum cyclic rate regardless of the number displayed.	射速（rF）：rF 變數設定系統循環射速。螢幕顯示值為期望的每秒射擊發數（RPS）。若 FCU 判斷在其他設定限制下無法達成所設定的射速，系統將自動採用計算出的最大可達射速，而不以顯示數值為準。
Max Semi Auto ROF (Sr) - This setting controls the maximum semi auto rate of fire. Once a shot has been fired the FCU will ignore additional trigger pulls until the time in the Sr setting has elapsed. This is adjustable in 0.1ms increments from 10 shots per second (Sr 01) to as low as 1 shot every 9.9 seconds (Sr 99). Setting this to 0 turns off the timer and allows you to fire as fast as you can pull the trigger.	半自動最大射速（Sr）：此設定用於限制半自動的最高射速。每次射擊後，FCU 會忽略後續扳機觸發，直到 Sr 所設定的時間間隔到期。可用 0.1 秒（文件原文標示 0.1ms，實際為以 0.1 秒為單位的延遲）為增量調整，範圍從每秒 10 發（Sr 01）到最慢每 9.9 秒 1 發（Sr 99）。設為 0 可關閉計時限制，半自動可依扳機速度射擊。
Selector Modes (S1 & S2) - The fire mode of each selector position is configured individually to allow the mapping of any fire mode to any selector position. S1 sets the mode of the semi-auto position and S2 sets the mode of the full auto position.	射擊選擇模式（S1 與 S2）：每個選擇桿位置可獨立設定射擊模式，以便將任何射擊模式對應到任何檔位。S1 設定半自動位置的模式；S2 設定全自動位置的模式。
00: Full Auto	00：全自動
01: Semi Auto	01：半自動
02-09: 2-9 Round Burst	02–09：2–9 發點放
Anti-Stiction Timeout (iS) - The Anti-Stiction timeout is a countdown timer that enables the Anti-Stiction Pulse when the timer reaches zero. This is set in 10 second increments and is automatically reset after every shot.	防卡滯計時（iS）：防卡滯計時為倒數計時器；當計時歸零時會啟用防卡滯脈衝。以每 10 秒為一單位設定，且每次射擊後會自動重設。
Anti-Stiction Pulse (iP) - The Anti-Stiction pulse is added to the Poppet Dwell when the Anti-Stiction Timeout has elapsed. This is used to counter static friction (“stiction”). In many cases it is not needed and can be turned off by setting the iP to 00.	防卡滯脈衝（iP）：當防卡滯計時（iS）到期後，iP 會加到氣閥開啟時間（Poppet Dwell, dP）上，用來克服靜摩擦（stiction）。多數情況不需要，可將 iP 設為 00 關閉。

Poppet Dwell (dP) - The poppet dwell variable controls how long power is applied to the solenoid and allows adjustment of the gas volume released through the nozzle. The higher the value, the longer gas is allowed to flow. The dwell is set in 0.1ms increments. This is the only settings which directly affects performance on single solenoid systems such as the F1 and JACK. To learn how to set the dwell of the F1 or JACK, see Poppet Dwell (dP) in the Fine Tuning section below.	氣閥開啟時間（dP）：用於控制電磁閥通電時間，並可調整噴嘴釋放的氣體量。數值越高，氣體流動時間越長。dP 以 0.1ms 為增量設定。對單電磁閥系統（如 F1 與 JACK）而言，dP 是唯一會直接影響性能的設定。關於 F1 或 JACK 的 dP 設定方法，請參考下方〈微調〉章節中的 dP 說明。
Nozzle Dwell (dn) - The nozzle dwell variable controls how long power is applied to the nozzle solenoid, affecting the time that the nozzle is held rearward. The higher the value, the longer the nozzle is held to the rear, which allows tuning for slower feeding magazines. This setting is highly dependent on the magazine, BB and Hop-Up combination. In most cases, a dN setting of 8ms to 14ms is ideal. Setting this value too low will result in inconsistent feeding and potential jams. (This setting only applies to Fusion Engine mode.)	噴嘴停留時間（dn）：控制噴嘴電磁閥通電時間，影響噴嘴後退保持的時間。數值越高，噴嘴後退時間越長，可用於調整較慢供彈彈匣。此設定高度依賴彈匣、BB 彈與 Hop-Up 的組合。多數情況 dn 設為 8ms 至 14ms 最理想。設得過低會造成供彈不穩或卡彈。（此設定僅適用於 Fusion Engine 模式。）
Return to Battery Delay (dr) - The RTB delay determines how long to wait for the nozzle to return forward while chambering the next round. Due to the design of the AEG magazine/Hop-Up, the actual delay time required varies each shot so the default value is set to a conservative 22ms. Although the dr value may be lowered for some setups, it should not be set below 17ms. (This setting only applies to Fusion Engine mode.)	回位延遲（dr）：RTB 延遲用於決定在裝填下一發時，等待噴嘴前進回位所需的時間。由於 AEG 彈匣／Hop-Up 結構的設計，每次射擊所需延遲時間會不同，因此預設值採保守的 22ms。部分配置可降低 dr，但不應低於 17ms。（此設定僅適用於 Fusion Engine 模式。）
Closed Bolt Mode (Cb) - Closed Bolt Mode allows simulation of a closed bolt mechanism by firing the round first, then cycling the nozzle. This allows for even faster trigger response and more consistent seating in the Hop-Up at the expense of dry-firing the first shot on a new magazine. (This setting only applies to Fusion Engine mode.)	閉鎖模式（Cb）：閉鎖模式可模擬閉鎖槍機機構——先擊發彈丸，再循環噴嘴。此模式可在犧牲新彈匣第一發空擊的情況下，換取更快的扳機反應與更一致的 Hop-Up 入膛定位。（此設定僅適用於 Fusion Engine 模式。）

FINE TUNING (FUSION ENGINE & F2)｜微調（Fusion Engine 與 F2）

It is a common misconception that there are particular settings which are recommended for optimum performance. In actuality rifles will normally require difference settings to perform at their best. Even if the settings	常見迷思是有一組「最佳設定」可帶來最佳性能；事實上，每把槍往往需要不同設定才能發揮最佳表現。即便某組設定在一把槍上效果很好，在另一把槍上也可能不佳，因為不同零件配置會讓槍的反應不同。設定不當

work great on one gun, they may not work well on another since every gun can behave differently depending on what components it is configured with. Incorrect settings can cause problems such as the gun not feeding/firing, jamming or terrible accuracy. Therefore you should always turn your rifle based on how that particular rifle responds.	可能造成不進彈／不擊發、卡彈或準度很差。因此應以該把槍的實際反應來進行調校。
Before making any adjustments to the FCU make sure that your rifle is set up exactly how you intend to field it. This means that you will have the same barrel group, magazines and BB's. You'll want to have the correct nozzle and adjust the pressure so that that rifle is shooting at the required muzzle energy with the same BB's you will be fielding it with. This is important since changing any one of these variables can make a difference in how the gun behaves and the FCU would need to be adjusted accordingly.	在調整 FCU 之前，請確保你的槍已以「實際上場」狀態完成配置：包含相同的槍管組、彈匣與 BB 彈。選用正確的噴嘴，並調整氣壓，使其在使用同款 BB 彈時達到規定的槍口能量。這點很重要，因為任何一項變數改變都可能影響槍的運作表現，進而需要重新調整 FCU。
For example, with a Fusion Engine or F2, changing the pressure will change how quickly the components of the engine move. If you decrease the pressure to reduce your muzzle velocity, the nozzle will retract slower so you may need to increase your nozzle dwell to ensure BB's feed reliably. If you decide to shoot a heavier BB then there will be more weight for the magazine spring to push up against and more weight for the nozzle to move forward into the chamber so you may need to adjust both your nozzle dwell and return to battery delay.	例如：對 Fusion Engine 或 F2 而言，改變氣壓會改變引擎內部零件移動速度。若為降低初速而降低氣壓，噴嘴回縮會變慢，可能需要提高 dn 以確保供彈可靠。若改用更重的 BB 彈，彈匣彈簧需要推更重的 BB 往上，噴嘴入膛阻力也增加，因此你可能需要同時調整 dn 與 dr。
To better understand how each dwell setting you adjust in the FCU affects the function of the engine, you first need to understand what happens inside of it when you squeeze the trigger. In FE Mode (FCFE) there are four main dwell settings that affect performance. The order of these dwells is the same with Closed Bolt off (cbof) and Closed Bolt on (cbon). The major difference between the two modes is the location of the start point in the cycle. The order of the dwells in a firing cycle with cbof are as follows: dn, dr, dP, rF in full auto the cycle repeats: dn, dr, dP, rF; dn, dr, dP, rF; dn, dr, dP, rF.	要理解你在 FCU 中調整各項 dwell 如何影響引擎運作，首先需了解你扣下扳機時引擎內部的動作。在 FE 模式（FCFE）中，有四個主要的 dwell 設定會影響性能。在閉鎖關閉（cbof）與閉鎖開啟（cbon）時，這些 dwell 的先後順序相同；主要差異在於循環起點不同。當 cbof 時，一次射擊循環的 dwell 順序為：dn、dr、dP、rF；在全自動時循環會重複：dn、dr、dP、rF；dn、dr、dP、rF；……。
The Fusion Engine and F2 are strictly a closed bolt systems so the nozzle is always biased forward regardless of cb being on or off. The cb setting is simply to change the	Fusion Engine 與 F2 本質上皆為閉鎖系統，因此不論 cb 開或關，噴嘴都會偏向保持在前方。cb 設定僅用於改變射擊循環順序。預

firing sequence. The default setting is cbof which means when the trigger is pulled the nozzle cycles first to chamber a round and then the poppet will fire. With cbon the poppet will fire first and then the nozzle cycles to chamber the next round. With cbon it replicates the action of a closed bolt firearm whereas with cbof it replicates the action of an AEG. The benefit of having closed bolt on is that you will get a faster trigger response and, when shooting semi auto, it guarantees the nozzle is forward and sealed before the shot is fired regardless of other settings. This promotes improved accuracy so it is an ideal choice for Sniper/DMR applications. The only downside is that if the chamber is empty, such as when you run the magazine dry, the first shot after loading a new magazine will be a dry fire since it must fire first before the nozzle will cycle to chamber the next round.	設為 cbof：扣扳機後先循環噴嘴進彈，再由氣閥擊發。cbon 則相反：先擊發，再循環噴嘴進彈。cbon 模擬閉鎖槍械；cbof 模擬 AEG。啟用閉鎖的好處是扳機反應更快，且在半自動時可確保噴嘴已前進密封後才擊發，進而提升準度，適合狙擊／DMR。缺點是當膛內為空（如彈匣打空）時，裝入新彈匣後第一發會空擊，因為必須先擊發後噴嘴才會循環進彈。
Now, moving on to the four main dwells that affect the engine's performance. Here we will explain what each dwell does and how you can go about adjusting it to fine tune the rifle. One thing to point out is that the default settings should work with any rifle since they are set conservatively. It is not required that the engine be tuned just to use it but only if you want to get the most out of the engine. Tuning mainly comes down to adjusting the engine to match the feed rate of the magazines and how quickly they can push the BB's up into the chamber. The faster your rifle can feed BB's, the faster you can push the engine.	接著說明四個主要 dwell 如何影響引擎性能，以及如何調整以微調步槍。需注意：預設值通常可在任何步槍上使用，因其設得較保守；並非一定要調校才能使用，但若想榨出最佳表現則需要調校。調校主要在於讓引擎匹配彈匣供彈速度（彈匣將 BB 推入膛室的速度）。你的步槍供彈越快，就能把引擎推到更高射速。
Each dwell has a recommended setting and some dwells have a minimum recommended setting regardless of all other factors e.g. BB’s, magazines, gun brand etc. The dn and dr dwells are in millisecond (1/1,000th of a second) increments while the dP is in 1/10th of a millisecond (1/10,000th of a second) increments.	每個 dwell 都有建議設定值，且部分 dwell 即使不考慮 BB、彈匣、槍品牌等因素，也有最低建議值。dn 與 dr 以毫秒（1/1000 秒）為單位；dP 以 0.1 毫秒（1/10000 秒）為單位。
When you want to tune the FCU, the order that you adjust the settings needs to be considered. It is recommended that you start with the FCU at the factory settings.	在調校 FCU 時，調整順序很重要。建議先將 FCU 恢復為出廠預設，再依序調整。
Nozzle Dwell (dn) - The first setting to address is the dn setting which determines how long the nozzle is held back. Load all the magazines that you intend to use with	噴嘴停留時間（dn）：首先要處理的是 dn，它決定噴嘴後退保持多久。將你預計使用的 BB 品牌與重量裝滿所有彈匣，先挑一個彈

the brand and weight BB's you intend to shoot. Select one magazine and use just that magazine for the first portion of the test. Insert the magazine into the gun and shoot about ten shots on semi and ten on full auto. If the gun feeds every single round lower the dn by 2 and repeat. Continue until the gun begins to miss feed, when it starts to miss feed increase the dn by 1 until it feeds every single round again. Burn through the whole magazine using semi and auto and confirm zero miss feeds. If there are miss feeds reload the magazine and shoot again, if there are still miss feeds increase the dn by 1 reload and shoot again until you can get through the entire magazine from full to empty without experiencing a feeding issue.	匣做第一階段測試。插入彈匣後，半自動射約 10 發、全自動射約 10 發。若每一發都能正常供彈，將 dn 減少 2 再重複。持續降低直到開始漏彈；一旦漏彈，將 dn 增加 1，直到再次每發都能正常供彈。接著用半自動與全自動把整個彈匣打空，確認完全無漏彈。若仍漏彈，重新裝滿彈匣再射；若仍漏彈，dn 再加 1，重複直到能從滿彈打到空彈都不出現供彈問題。
Now, start working your way through the rest of your magazines to ensure you have no feeding issues with any of them. Again, shoot from full to empty as the magazines spring tension can change depending on how much ammo the magazine is pushing up. One magazine might not feed as well as another so, if you experience a miss feed with any other magazine, that magazine feeds slower and you should repeat the first test and adjust the dn to work with that magazine until it feeds properly. Once you can shoot any of your magazines without a miss feed, take note of your dn setting because this is the lowest you can take it at this pressure, using this nozzle, with these magazines and these BB's. If you are not going for the fastest rate of fire possible you will probably want to increase the dn by 1 or 2 to guarantee perfect feeding during use.	接著逐一測試其他彈匣，確保沒有供彈問題。請同樣從滿彈打到空彈，因為彈匣彈簧張力會隨供彈量改變。有些彈匣可能供彈較慢；若你在其他彈匣遇到漏彈，表示該彈匣供彈較慢，應以該彈匣重做前述測試，調整 dn 直到供彈正常。當你能用任何彈匣都不漏彈時，記下 dn：這就是在此氣壓、此噴嘴、這些彈匣與 BB 條件下能設定的最低 dn。若你不是追求極限射速，建議再將 dn 增加 1 或 2，以確保實戰供彈萬無一失。
Poppet Dwell (dP) - The dP setting determines how long power it applied to the solenoid which opens the poppet valve. The poppet valve is the valve that releases air to fire the BB. If this setting is too low the gun will not fire the first shot after sitting for a short period of time and if it is lower still the gun may not fire at all. Some guns will need the dP to be adjusted with significant changes in operating pressure, climate and/or geography. For example, it will most likely require a higher dP when operating in colder climates than in warmer climates.	氣閥開啟時間（dP）：dP 決定電磁閥通電多久以開啟氣閥（poppet valve）。氣閥是用來釋放空氣擊發 BB 彈的。若 dP 太低，槍在靜置一段時間後第一發可能不會擊發；再更低則可能完全不擊發。部分槍支在操作氣壓、氣候或地理環境有明顯變化時，可能需要調整 dP。例如在寒冷環境下通常需要比溫暖環境更高的 dP。
(continued on reverse side)	（背面續）

You will go about adjusting the dwell differently for the Fusion Engine than you will for the F2, F1 and JACK. The poppet valve on the Fusion Engine is able to produce a much higher volume of air than other systems. Because of this, changes to the dwell will not have a noticeable affect on velocity unless you are using an extremely long barrel. Therefore you will mainly be adjusting the dwell to ensure the system fires on the first shot rather than changing the air volume. To adjust air volume on the Fusion Engine you will need to do it manually using either the optional low flow poppets we offer or adjusting the stroke of the poppet valve with shims.	備註：Fusion Engine 的 dwell 調整方式與 F2、F1、JACK 不同。Fusion Engine 的氣閥可提供遠高於其他系統的氣量，因此除非使用極長槍管，調整 dwell 對初速影響通常不明顯。Fusion Engine 調整 dwell 的重點在於確保靜置後第一發能正常擊發，而不是用來改變氣量。若要改變 Fusion Engine 的氣量，需使用選配的低流量氣閥（low flow poppets）或透過墊片（shims）調整氣閥行程（stroke）。
(Fusion Engine) - To set the dwell on a Fusion Engine, start at the default dP25 and reduce the dP setting by 2 and let the gun sit for 5 minutes. Fire the gun twice on semi and confirm that the poppet valve fires air down the barrel for both shots. Continue to reduce the dP by 2 and letting the gun sit for 5 minutes until the first trigger pull does not fire air down the nozzle/barrel. Increase the dP by 2 and this now the lowest you can take the dP at this pressure and general climate and geography.	（Fusion Engine）設定 dP：從預設 dP25 開始，每次將 dP 減少 2，然後讓槍靜置 5 分鐘。以半自動射擊兩次，確認兩發都能將空氣釋放至槍管（即正常擊發氣流）。持續以「減 2、靜置 5 分鐘、射兩發」的方式，直到第一次扣扳機無法釋放空氣至噴嘴／槍管。此時將 dP 增加 2；該值即為在此氣壓與一般氣候／地理條件下可設定的最低 dP。
The valves in the F2, F1 and JACK open and close very quickly and to not produce as much air volume. Therefore you are able to fine tune the how much air volume is released by simply adjusting how long the valve is open without requiring the use of different valves or shims like a Fusion Engine.	F2、F1 與 JACK 的閥門開關非常快，且氣量較小，因此你可以單純透過調整閥門開啟時間（dP）來微調釋放的氣量，而不需要像 Fusion Engine 一樣更換閥門或用墊片調行程。
(F2, F1 and JACK) - To set the dwell on these systems, you would first set your dP to the maximum setting of 99 and then adjust your air pressure until you are shooting at the desired velocity with the BB weight you will be using. Then start reducing the dP by 5 at a time until you see the velocity decrease or become noticeably inconsistent. This is a sign that you are under voluming the barrel so that air flow is being shut off before the BB reaches the end of the barrel. Increase the dP by 1 at a time until the velocity and shot consistency returns to where it originally was and then set the dP 2 higher than that point to account for any variance in the respond time of the solenoid.	（F2、F1 與 JACK）設定 dP：先將 dP 設為最大值 99，再調整氣壓，使其以你將使用的 BB 重量達到目標初速。接著每次把 dP 減少 5，直到你看到初速下降或變得明顯不穩，這表示槍管「欠供氣量」（氣流在 BB 抵達槍口前就被關閉）。此時每次將 dP 增加 1，直到初速與一致性回到原本水準；再把 dP 設為該點再高 2，以吸收電磁閥反應時間的些微差異。

Rate of Fire (rF) - Adjusting the rate of fire will only change the delay in-between each firing cycle and does not affect trigger response. Even if you have it set to 1 round a second, the system will still fire instantly when the trigger is pulled. The set rate of fire will only take affect on automatic and burst modes. It will not affect semi automatic.	射速（rF）：調整射速只會改變每次射擊循環之間的延遲，不影響扳機反應。即使射速設定為每秒 1 發，扣扳機時仍會立即擊發。射速設定僅影響全自動與點放模式，不影響半自動。
This concludes the main dwells which affect performance. For some, making changes to the FCU can be a little disconcerting if you don't really understand what the adjustments do are how they really affect the systems performance. This long winded explanation should shed some light on the mysteries of the FCU but just remember that nothing you do in the FCU will actually damage the engine. If any changes made seem to make the F2 no longer function properly, the changes can always be undone or reset to default. The FCU can easily be reset to factory default by simply holding in on the joystick while plugging in the battery. The FCU will display DEFT when the battery is connected and all of the settings will go back to factory default.	以上即為影響性能的主要 dwell 設定。對某些人來說，若不清楚調整會造成什麼影響，改 FCU 設定可能令人不安；本段說明希望能釐清 FCU 的運作。請記得：你在 FCU 裡做的任何調整都不會損壞引擎。若調整後讓 F2 無法正常運作，隨時可撤回或重置。只要插電時按住搖桿即可恢復出廠預設；電池連接後螢幕會顯示 DEFT，所有設定將回到出廠值。
We can now touch on the non-essential settings of the FCU to better explain how they are adjusted and their function.	接下來說明一些非必要設定，幫助你了解如何調整及其功能。
Selector Modes (S1 & S2) - To program a fire mode to each selector position you would adjust the S1 and S2 settings in your FCU programing menu. On most common rifles such as an M4, the S1 is your semi auto selector position and S2 is your full auto selector position. By default the S1 should be set to S101 for Semi Auto, and the S2 should be set to S200 for full auto. Changing the number will change the fire mode set to that selector position.	射擊選擇模式（S1 與 S2）：要為每個檔位設定射擊模式，需在 FCU 設定選單中調整 S1 與 S2。以常見 M4 為例，S1 通常是半自動檔位，S2 是全自動檔位。預設 S1 應為 S101（半自動），S2 應為 S200（全自動）。改變數字即可改變該檔位所對應的射擊模式。
00 = Full Auto, 01 = Semi Auto, 02 = 2 Round Burst, 03 = 3 Round Burst, etc. on up to 09 = 9 Round Burst.	00＝全自動，01＝半自動，02＝2 發點放，03＝3 發點放……一直到 09＝9 發點放。
Max Semi Auto ROF (Sr) - The semi auto delay mode is available on FCU's that have firmware revision rE1.0 and higher. To program it, enter programing mode and scroll to the "Sr" menu. The default is Sr0F (off). If you press up on the joystick you will change it to Sr01 which is a 0.1 second delay in-between shots. You can continue to increase that number in 0.1 second	半自動最大射速（Sr）：半自動延遲模式適用於韌體版本 rE1.0 以上的 FCU。設定方式：進入設定模式並切換到「Sr」選單。預設為 Sr0F（關閉）。若將搖桿向上，會變成 Sr01（兩發之間 0.1 秒延遲）。可再以 0.1 秒增量增加到 Sr99（兩發之間 9.9 秒延遲）。

increments up to Sr99 which is a 9.9 second delay in-between shots.	
Anti-Stiction (iS) & (iP) - Stiction (static friction) is the affect of two parts being pressed together for a prolonged period of time. Liken it to a sofa sitting on a hardwood floor. It takes more effort to start pushing the sofa across the floor after it has been sitting there for a while then after it had just been moved a few minutes ago. The same thing applies to an HPA system. After it has been sitting a while it can take a longer dwell to fire off after it has been sitting idle for a while then after it was just recently fired.	防卡滯（iS）與（iP）：卡滯（stiction，靜摩擦）是指兩個零件長時間被壓在一起後，起動所需力量變大。可想像沙發放在木地板上：放久後要推動會比剛移動完更費力。HPA 系統也一樣，長時間閒置後，第一發可能需要更高的 dP 才能擊發；而剛射擊過不久則較不需要。

The rF setting on firmware rE1.0 and higher will adjust the cyclic rate (rate of fire) of the system in actual rounds per second. Therefore, if the rF is set to 18, the engine will produce 18 shots per second providing the other delays and dwells could be accomplish in that amount of time. For example, if you were to set the rF to 30 rounds a second yet the dn, dr and dp were set high enough that only 23 rounds a second were possible, the engine will only produce 23 rounds a second until the dwell/delay on those other settings were reduced. Therefore by optimizing those settings you will be able to achieve the highest rate of fire possible with this particular set of variables.	在韌體 rE1.0 以上，rF 設定會以「實際每秒發數」調整系統循環射速。因此若 rF 設為 18，在其他延遲／dwell 設定可在該時間內完成的前提下，引擎就會產生每秒 18 發。舉例：若 rF 設為每秒 30 發，但 dn、dr、dP 設得太高導致最多只能達到每秒 23 發，則引擎將只會以每秒 23 發運作，直到你降低其他 dwell／延遲後才能提高射速。換言之，透過最佳化這些設定，你就能在既定變數下達到最高可行射速。
Return to Battery Delay (dr) - The dr controls the time between releasing the nozzle to return forward and firing the poppet valve. The nozzle takes a minimum of 9 milliseconds at 100 psi to return all the way forward without a BB in front of it. With the solenoid de-energize time of 2.5 milliseconds the nozzle requires at least 11.5 milliseconds (with no BB in front of it) to return all the way forward from the time the nozzle solenoid is told to shut off. Pushing a BB through the bucking lips will slow the nozzle return speed down some especially if its fit is fairly tight or if you are using heavier ammo. If the dr is lower than 12 the poppet valve will fire off before the BB is seated properly and the nozzle has made a good seal with the bucking. This will result in an air leak and a loss of power,	回位延遲（dr）：dr 控制在釋放噴嘴前進回位與擊發氣閥之間的時間。在 100 psi 且噴嘴前方沒有 BB 的情況下，噴嘴至少需要 9ms 才能完全前進。加上電磁閥去磁／斷電時間 2.5ms，從噴嘴電磁閥被命令關閉開始，噴嘴至少需要 11.5ms（無 BB 阻力）才能完全前進。若需將 BB 推過橡皮唇，噴嘴回位速度會更慢，尤其是配合較緊或使用較重 BB 時。若 dr 低於 12，氣閥可能在 BB 尚未正確入膛、噴嘴尚未與橡皮形成良好密封前就擊發，導致漏氣、威力／一致性／準度下降，或在全自動時卡彈。若你發現彈著散布很大，dr 設得太低可能是原因。可嘗試每次將 dr 增加 5，直到彈著變緊；當彈著不再改善後，再每次降低 1，找出開始影響彈著的位置。若你不追求高射速，dr 應保守設

consistency and accuracy or jamming especially in full auto. If you notice you have a rather wide shot grouping then having the dr set too low could be the culprit. To experiment you can start increasing your dr by 5 at a time until you see that the shot group gets tighter. Once the group doesn't appear to be getting any tighter, you can lower the dr by 1 at a time until you find where it starts to affect the shot grouping. If you are not trying to achieve a high rate of fire the dr should be set conservatively high to allow the maximum amount of time for the BB to settle and the air nozzle to seal.	高，以給 BB 充分時間穩定入膛並讓噴嘴密封。
Normally if you have your dP set correctly the anti stiction mode is not needed. However, under certainly conditions such as operating in cold temperatures, it may be needed to ensure the system will fire off on the first shot. The anti stiction mode provides you with the ability to increase the dP for only the first shot after a pre-defined amount of time has passed without requiring you to readjust your main dP setting.	通常若 dP 設定正確，就不需要防卡滯模式。然而在某些條件下（例如低溫），可能需要它來確保閒置後第一發能正常擊發。防卡滯模式可讓你在不改動主要 dP 的前提下，僅針對「閒置一段時間後的第一發」提高 dP。
The "iS" is the anti-stiction timer. Each number has a value of 10 seconds (i.e. 01	「iS」是防卡滯計時器。每個數字代表 10 秒（例如 01＝10 秒、02＝20 秒等）。計時會在每次扳機輸入後開始，當計時結束時，會在第一發射擊中把你在「iP」設定的數值加到「dP」上。
= 10sec, 02 = 20 sec, ect.). The timer will begin after each trigger input and once it ends it will add the value you have set in "iP" to your "dP" for the first shot.	因此若你設定 iS03、iP10、dP50，當系統閒置 30 秒後，第一發會自動把 dP 提升到 60；之後射擊又會回到 dP50，直到再次閒置 30 秒才會再提升第一發。
Therefore if you have "iS03", "iP10" and "dP50", after the system has been idle for 30 seconds it will automatically increase your dP to 60 for the first shot and then lower it back to 50 for the following shots until the system has once again sat idle for 30 seconds.	請注意：若 iP 未設定（例如 iP00），即使 iS 有設定，也不會對 dP 加值；此時 iS 只是計時器，不會產生額外效果。
Note that if you have nothing set for your iP (i.e. iP00) then it will not add an extra plus to the dP regardless of what you have iS set to. The iS is simply a timer.	射擊計數器（Shot Counter）：查看方式為進入設定模式，讓螢幕顯示版本號（例如 rE3.0），然後將搖桿一直往下按住，螢幕會顯示 4 位英數字。將該值輸入十六進位轉換器，即可得到 FCU 已循環的射擊次數。若射擊次數很高超過低 4 位最大值，計數會延伸到另一組 4 位，可透過搖桿往上查看；該組數字會加在低位數之前。例如：搖桿向下

	顯示 3bcE，向上顯示 0006，將 6 放到 3bcE 前面得到 63bcE，即等於 408,526 發。