BURST WIZARDTM 4 PLUG-AND-PLAY + MULTI-BURST + REAL STEEL MOSFET (PAGE 1) **QUICK START**

MODE OF ODERATION	HOW TO CET UP YOUR DAYA	DECLUT
MODE OF OPERATION	HOW TO SET UP YOUR BW4	RESULT
3-ROUND BURST & 0 SEC.	No setup is required! Just connect your BW4 in-line	Your AEG fires full-auto like no BW4 exists! To feel 3-
RESUME FULL-AUTO	between battery and AEG. Then wait 4 secs to play.	round burst, run CMD # 3 to add delay for resuming
CET UP DIVIA TO FIRE	16 : 1100 (1155 - COAD A - 11 - : : : : : : : : : : : : : : : :	full-auto after burst. Try input 6 to add 0.6 sec delay.
SET UP BW4 TO FIRE:	If using LIPO/LIFE, run CMD 4 enable protection first	Once calibrated for 1- and 3-rnd-burst, your AEG fires
PERFECT X-ROUND BURST	If AEG fires 1 or ½ a shot LESS: CMD #7. Pull 1 to	perfectly unless you change gearbox internal or use a
(Run CMD # 2 to set burst	allow input, pull 4 to set to 4. Wait for 3 quick blinks.	different battery type: Like from NIMH to LIPO etc.
cnt = 1. If not perfect, run	If 4 not perfect, re-enter: 1 to 9 for it to fire perfect.	Advance users: Always calibrate AEG to fire exactly 1-
CMD # 7 to calibrate AEG.	If AEG fires 1 or ½ a shot MORE: CMD # 7. Pull 1 for	round burst first by using CMD # 2 & 7. Then run CMD
Repeat for burst cnt = 3)	input, pull 14. If 14 not perfect, re-enter: 11 to 19.	# 5 to get REAL STEEL cycle-gear ROF reduction!
DISABLE RESUME FULL-	Immediately after battery is plugged to your BW4:	BW4 fires burst rounds only (No resume to full auto!)
<u>AUTO</u>	1) PULL & HOLD trigger for 2 seconds to see your	Adjust burst count by using CMD # 2 –SET BURST
pull & 1	BW4 blink and hear the motor beep 2 TIMES.	COUNT.
hold * 2	2) KEEP HOLDING the trigger until BW4 beeps out	NOTE: With resume FULLAUTO disabled, you can
X=batt Voltage	the battery voltage (Page 4 on how to read Volt)	toggle between SEMI (1-burst) & current burst count
	3) Release & wait 4 sec for the dim light to turn on	by holding trigger for 1.2 SEC after BURST firing ends.
ENABLE RESUME FULL-	Same as above, except BW4 blinks and beeps 1 TIME	BW4 fires burst rounds. Resume FULLAUTO firing if
AUTO pull & >1//	(In other word, each time you pull & hold the	trigger is held. NOTE:
AUTO pull & hold	trigger at power up until batt. voltage beeps out	Adjust resume FULLAUTO Means LED Adjust hypering CAAD # 3
X=batt voltage	to you, you are toggling resume full auto on/off)	delay by using CMD # 3 blinks 2 times 2
ENABLE PWM MODE	Immediately after battery is plugged into your BW4:	BW4 fires at FULLAUTO mode only with no burst
ROF FIRING	1) PULL & HOLD the trigger for 2 seconds to see and	mode firing! But you still get the benefit of MOSFET's
	hear BW4 blink and beep 1 or 2 TIMES .	soft start and BW4 trigger switch arcing protection.
pull & \lambda	2) Release the trigger right away (You have 1 second	With BW4, you can also adjust PWM mode ROF speed
noid 2 sec 1, 2	to release) Otherwise, you are just running the	from 100% down to 40% by CMD # 5 –SET PWM ROF%
release trigger	above EN/DISABLE RESUME FULLAUTO command	Input=16. Then input 10 th digit then unit digit of ROF
88-1	3) Wait 4 sec. LED light is off in PWM ROF mode	Setting ROF % less than 50 % may stop or stall AEG
DISABLE PWM MODE	Immediately after battery is plugged into your BW4:	BW4 fires in burst rounds mode again.
ROF FIRING	1) PULL & HOLD the trigger for 2 seconds to see	NOTE1: You can also disable PWM mode by running
	and hear BW4 blink and beep 3 TIMES.	CMD # 2 to set up any burst count!
	2) Release the trigger right away (Again, you have 1	NOTE2: Use CMD # 15 to reset BW 4 to factory
pull & \lambda	second to release).	settings if it doesn't work as programmed.
Hold 2 sec	3) Wait 4 seconds for the dim light to turn on	NOTE3: See TRICK3 If AEG fires burst round again and
release trigger	_	again without stopping once trigger is pulled.

--- (BW4) BURST WIZARDTM 4 PNP MULTI-BURST REAL STEEL MILSIM MOSFET COMMANDS ---

To activate a command, PULL & RELEASE trigger the # of times equal to the command # within 4 seconds after battery is plugged in.

(IMPORTANT!! FOR EVERYONE'S SAFETY, ALWAYS WEAR GOGGLE & REMOVE MAGAZINE FROM AEG WHEN SETTING UP YOUR BW4)						
COMMAND #		COMMAND SET UP PROCEDURE (NOTE: DO NOT UNPLUG BATTERY TO BW4 DURING SETUP)				
2 – SET BURST COUNT	1)	BW4 blinks 2 times (NOTE: If wanted, only unplug battery at the end of a command. This one is after 4)				
\rightarrow pull X	2)	Pull & release the trigger the # of times that you want your NEW burst count to be from 0 to 9 (0 = NO PULL)				
2	3)	BW4 blinks the # of times per your input				
\sim		(0 means no burst firing. See CMD # 3 for full auto only MILSIM firing)				
	4)	BW4 blinks 3 QUICK times to signal it has saved your setting and ended				
		the command. Wait 4 secs for the dim light on before firing new burst rounds				
3 - SET RESUME	1)	BW4 blinks 3 times. Pull & release trigger # of times of 0.1 second you want to add to resume-FULLAUTO delay				
FULLAUTO DELAY	2)	BW4 blinks the # of times per your input. Then BW4 blinks 3 QUICK times to save your setting				
→ pull X	3)	Wait 4 seconds for the LED light to be at dim mode before firing with your new RESUME-FULLAUTO delay				
		(Note: for 0.1 second delay, pull & release 1 time. For 1 sec delay, pull & release 10 times (10 x 0.1 = 1 second).				
$\stackrel{\frown}{\times}$		TRICK: pull nothing at 1) until times out (3 quick blinks) for 0 sec delay. It firs like FULLAUTO with no burst!				
4 – SET LIPO OR	1)	BW4 blinks 4 times (* For BW4 fire burst count accurately with LIPO/LIFE, enable their protection first!*)				
LiFePO4 PROTECT	2)	Pull & release trigger 1 time to allow LIPO or LiFePO4 protection status change (Pull 2 times means no				
>1 → pull 1		change to the value stored. BW4 blinks 2 times and go to step 5)				
→ \\\/*	3)	, , , , , , , , , , , , , , , , , , , ,				
101 202	4)					
pull 0,1 or 2	5)	BW4 blinks 3 QUICK times to end the command See Page 4 <u>TRICK3</u> on why using 4, 5 or 6 as input instead				
0.1.2	6)	Wait 4 seconds before firing again See page 4 for BW4's LIPO / LiFe low volt blinking pattern				



COMMAND SET UP PROCEDURE (DO NOT UNPLUG BATTERY TO BW4 DURING SETUP) **COMMAND#** 10 - SET PRECOCKING & BW4 blinks 10 times (Precocking can also be used to set spring to most relaxed position for some AEG!) Pull & release the trigger 1 time to enable input of the 10th digit # for the pre-cocking delay (No pulls or 2) **BATT DECAY TIME** ► puli 1 pulling 2 times means no change to the value stored. BW4 blinks 2 times and go to step 9) 3) BW4 blinks 1 time. Now, pull & release the trigger the 10th digit # X of your pre-cocking delay (e.g. pull & release the trigger 1 time means 10 milliseconds, 2 times means 20 milliseconds. No pulls mean 00 sec) BW4 blinks # per input (IF YOU DIDN'T INPUT 10TH DIGIT #, WAIT 1 QUICK BLINK FIRST BEFORE STEP 5) 4) pull Y pull Z Pull & release trigger the unit digit # Y of pre-cocking delay (e.g. pull & release the trigger 1 time means 1 millisecond, 2 times means 2 milliseconds. No pulls mean 0 millisecond) BW4 blinks # of input (IF YOU DIDN'T INPUT UNIT DIGIT #, WAIT 1 QUICK BLINK FIRST BEFORE STEP 7) To TOGGLE precocking (NOTE: The above steps allow you to set the pre-cocking delay from 0 to 99 milliseconds) on / off, pull & release 7) BATT. DECAY COMPENSATION NOTE: To clear precocking time to 0, do not pull trigger at 3) and 5) trigger one time at Pull & release the trigger the unit digit # Z of your battery decay compensation time. e.g. pull & release the power up. Wait 7 sec. See 1 blink plus 3 quick trigger 2 times add 2 millisec to precocking delay per 0.2 volt decay of battery from its start voltage when you first plug it in (if start V = 11, final V = 9, Z=1: Delay=(11-9)/(1x0.2)=10ms) No pulls = 0 = 10 no compensation. blinks: means disabled; Next time, see 3 quick 8) BW4 blinks for the # of times per your input (0 to 9 equivalent to 0 millisecond to 9 milliseconds) blinks only means: BW4 blinks 3 QUICK times to tell you that it has saved your setting and ended the command precocking is ENABLED. NOTE: If you only want battery decay compensation with no precocking, set precocking to 1 ms not zero! 11 - TRAIN BW4 FIRE Use this to set burst count to exactly 1 or any specific timing for any AEG if CMD # 2 & COM # 7 not perfect! **ANY BURST COUNT** BW4 blinks 11 times (NOTE: Your own burst timing is erased when CMD # 2 is used to set up burst counts) 1) 2) Pull & release trigger 1 time to train (Pull 2 times to clear timing stored. It blinks 2 times and go to 9) 11) • pull 1 3) BW4 blinks 1 time 4) Pull & release the trigger 1 time to start from fresh timing in 30 millisecond steps. 2 times to adjust from pull X = 0,1, 2 or 3 previous stored timing in 30 millisecond steps and 3 to adjust the stored timing in 3 millisecond steps. 11/1/1/1/ (No pulls allow you to replay last stored timing! BW 4 will blink twice in 3 seconds & go to step 6 to replay) (x=1) (x=2) (x=3)5) (If step 4 is 1) Pull Y times to input new timing. If step 4 is 2 or 3, Y to adjust timing from old stored timing. start from 0 veach pull add If Y is <= 10, Y adds to the stored timing. If Y is > 10, then value (Y-10) subtracts from the stored timing. each pull add 3 ms e.g. Y= 3 and # of pulls in step 4) is 1 or 2, then it means add 90 ms to the stored timing (3x30=90 ms) 30 ms Y=# of pull e.g. Y= 12 and # of pulls in step 4) above is 3, then it means subtract 6 ms from the stored timing (This is how it works: (Y-10) that is 12-10 = 2. So, 2x3ms = 6ms. Since Y > 10 so the stored timing is minus by 6 ms). pull to replay timing 6) When you are ready, pull and hold the trigger to play out the stored burst timing to check if it is right. pull to replay timing 7) Release and pull the trigger again to confirm the burst timing one more time. Release the trigger. pull 0, 1 or 2 If the timing is right, pull trigger 1 time to save. No pull or pull 2 times goes back to 4) to adjust again! 8) save & 2 9) BW4 blinks 3 QUICK times to tell you that it has saved your setting and ended the command 10) Wait 4 sec to your own burst timing (NOTE: Multi-Burst will fire 3 identical Burst from your own timing!) ANNOUNCE ROF 1) BW4 blinks 12 times **OF YOUR AEG** 2) When you are ready, PULL & HOLD the trigger until your AEG fires all 11 rounds for ROF measurement

|// → pull & hold AEG fires[♥]

15 -RESET SETTINGS

(With BW4, you know what the ROF is without needing a chronograph!)

- 3) Continue to hold the trigger for the BW4 to blink and beep out the ROF of your AEG
- Your BW4 will blink out the 10th digit of the ROF follows by the unit digit (e.g. 1 blink follows by 6 blinks 4) means ROF is 16 rounds per sec. If it just blinks 8 times without a break, then the ROF is 8 rounds per sec)
- Release the trigger now! BW4 blinks 3 QUICK times end the command 5) To get accurate ROF result, you need to tune AEG to fire exact 3-round burst perfectly using CMD # 2 & 7

BW4 blinks 3 QUICK times and then dim light is on after 4 seconds (All settings back to factory values)

13 -REPORTS ALL THE USER'S SETTING STORED IN THE BURST WIZARD™ 4

# OF BLINKS	IF FUNCTION IS ENABLED (Terminate command any time by unplugging the power to it)	IF FUNCTION DISABLED
2 –Burst Count	BW4 blinks out # of burst count (0 ~ 10 times) (10 times is your own burst timing)	
3 –Fullauto Delay	BW4 blinks 1 time follows by # of blinks (0.1 second added) to the FULLAUTO delay	BW4 blinks 2 times
4 - LIPO Protection	BW4 blinks 1 time follows by 1 blink for LIPO protection, 2 for LiFe protection	BW4 blinks 2 times
5 – ROF %	BW4 blinks 1 time follows by ROF delay #, by 10 th digit PWM ROF %, by unit digit ROF %	BW4 blinks 2 times
6 – Multiple Burst	BW4 blinks 1 time follows by X blinks of burst delay, by 2 nd Y burst , by 3 rd Z burst count	BW4 blinks 2 times
7 – Sensitivity	BW4 blinks 1 time follows by the # of current burst count sensitivity value (from 1 to 19)	BW4 blinks 2 times
8 – Spring Advance	BW4 blinks 1 time follows by 1 blink	BW4 blinks 2 times
9 - Sniper Delay	BW4 blinks 1 time follows by the # of blinks (0.2 second added) to the SNIPER delay	BW4 blinks 2 times
10-MAG. Delay	BW4 blinks 1 time follows by # of blinks of # of sec added to MAGAZINE change delay	BW4 blinks 2 times
11 –Magazine CAP.	BW4 blinks 100 th digit, follows by 10 th digit, follows by the unit digit of magazine capacity	
12 – Precock Delay	BW4 blinks 1 time follows by 10 th digit # precocking, by unit digit# precocking millisecond	BW4 blinks 2 times
13 – Battery Decay	BW4 blinks 1 time follows by unit digit of Battery Decay Compensation in millisecond	BW4 blinks 2 times
14 – TAP Burst	AP Burst BW4 blinks 1 time follows by 1 blink. (TAP Burst functions in Hardwire Mode only!)	

LIPO & LIFePO4 LOW VOLTAGE WARNING & SHUT OFF BLINKING PATTERN

You get warning once every 16th shots if the battery is in the low voltage warning zone and shut-off when shut off voltage is reached.

•	•	•	•	•	•	9
2 TIMES DO	UBLE BLINK	ING + MOTOR BEEP	LOW VOLTAGE	LIPO	(12.4V FOR 14.8V,	9.4V FOR 11.1V AND 6.8V FOR 7.4V BATT.)
			WARNING:	LiFePO4	(14.2V FOR 16.5V,	11.4V FOR 13.2V AND 8.6V FOR 9.9V BATT.)
3 TIMES DO	OUBLE BLINK	(ING + MOTOR BEEP	LOW VOLTAGE	LIPO	(12.2V, 9.2V & 6.	6V for the above batteries respectively)
			AEG SHUT-OFF:	LiFePO4	(14.0V, 11.2V & 8	.4V for the above batteries respectively)

HOW TO READ - BATTERY VOLTAGE ANNOUNCMENT FROM YOUR BURST WIZARD™ 4

Battery voltage is announced with long blinking interval (0.5 second) for unit volts, short blinking interval (0.25 second) for decimal voltage. For example: 9.6V is x x x xxxxxxx. The first blink always represents 6 volts, so 4 long blinks and 6 short blinks mean 9.6V.

<u>PROCEDURE 1</u> – TOGGLE BETWEEN SEMI AND CURRENT BURST COUNT DURING A GAME (Resume full auto is set to off. See QUICK START)

Pull & hold the trigger after last burst round firing. After 1.2 seconds, the motor shakes 2 times to signal that you have toggled the burst count. If you were at 3-round burst, it would be toggled to semi. Now at full-auto position, you can fire your AEG either in x-round burst or semi. If you set your burst round x=1, then your AEG locks to semi only!

PROCEDURE 2 – NEW COMMAND 6: MULTIPLE BURST ROUNDS SETUP AND USAGE (Real Steel speed 3-round burst is: 1-1-1)

Congratulations! Your BW 4 has just transformed your AEG into the most amazing shooting machine. You can now fire not just 1 round of burst firing with one pull of the trigger but up to 3! The delay between burst round is settable in increment of 0.015 second. Now, It is cool to setup 1-1-1 shot with 0.03 sec pause to really hit your target crisp & emulate ACTUAL gun speed and save BBs. Try 3-3-3 with 0.15 sec delay!

PROCEDURE 3 – NEW COMMAND 5: 100% FULL BATTERY POWER REAL STEEL ROF REDUCTION SETUP AND USAGE

BW4 gives you the most realistic emulation of real steel fullauto ROF of $10 \sim 20$. Just run CMD #5 to set pause time first. Enter 1 to 30 (except 16) for delay of input times 0.005 sec. For example, input = 10 means delay of $10 \times 0.005 = 0.05$ sec. BW4 fires at 100% battery power with quickest trigger response possible on each firing but pause between to reduce the overall ROF! Now firing like a real gun is easy! **BONUS: Reducing ROF makes gearbox last much longer! See QUICK START to setup perfect 1-Burst if needed.**

PROCEDURE 4 – SETUP FOR REAL STEEL MILSIM PLAYER TO FIRE FULLAUTO ROF REDUCTION WITH MAGAZINE CAPACITY COUNT

(1)-CMD #2 set burst count =1. (2)-If you run your AEG with 11.1V LIPO, use CMD #4 to enable LIPO protection now. (3)-If needed CMD #7 to tune it to fire exactly 1 burst. (4)-CMD #5, enter 5 for CYCLE-GEAR full auto ROF reduction by 0.025 sec (you can enter 1 to 30). (5)-CMD #9, if wanted, set magazine delay time and capacity count. (6)-CMD #9, if input is 16, then delay = forever. Plugn-n-play only, you need to implement a switch wired to the cable-plug wires (order separately) to reset the count and allow your gun to fire again (The cable-plug plugs into the connector on the BW4 under the shrink wrap! One side of the switch is connected to the white wire, the other side to the red wire). (7)- If wanted, CMD #2 & 6 to set burst to: 1-1-1 for real steel ROF reduction 3-rnd burst! (8) Full auto only, set CMD #2 & #3 to 0, #5 to set ROF. You now see that there are endless ways to play your games!

Ultimately, some of you want to hardwire the BW4 to your AEG to 100% protect the trigger switch & get quicker trigger response! You can do so by purchasing the hardwire kit from http://www.burstwizard.com which includes an interface cable with a plug, 4 heat shrink tubes and an instruction sheet. Also, please watch demo videos on setting up BW4 at https://aimsportsinc.com/bw4

- **TRICK1:** After 3-quick-blink at the end of a command & before dim light is on in 4 sec, you can pull trigger again to do another command.
- **TRICK2:** BB counting can also be used to give warning before magazine is empty! Just set the count to 10 ~ 20 BB less than actual. For a 350 hicap MAG, CMD #9 set delay=1 sec, count=330. When gun beeps 4 times after firing, you know it's time to swap the magazine.
- **TRICK3:** For some AEG with lighter spring, if it keeps firing after a burst round repeatedly, run CMD# 4 to fix the problem: Instead of 0, 1, 2 for NO PROTECT, LIPO & LiFe PROTECT, input 4, 5, 6 respectively to do the same thing plus correcting the issue. (e.g. 5 instead of 1)
- **TRICK4:** LIPO or LIFE Battery is damaged if you allow it to discharge totally! Although BW4 consumes less than 0.003A of current when the AEG is not firing (standby mode), it is a good practice to always unplug the battery from your AEG after the game is over!

ATTENTION: WHEN BW4 CUTS OFF POWER TO YOUR AEG, ALWAYS FIX THE ISSUE TO AVOID MORE DAMAGES TO IT BEFORE PLAYING AGAIN!

BW4 proprietary ADAPTIVE RESETTABEL FUSE reliably protects any motor from over current situations including gearbox lockup by cutting off power to the motor and turn LED brightly on. It also cuts power if battery is weak and can't spin the motor. Correct issues immediately!