PREDATOR MANUAL - AFA v2.1

AFA v2.1 released 10-24-2004. If you have an older board then I suggest sending it back into TAG so it can be flashed with the newest code.
This manual written by Ydna. Contact him at ydna@zdspb.com if you have any questions.
Predator code is installed onto Morlock boards that ship from TAG. Morlock boards that ship from KM2 are flashed with a different code.

To turn on the marker, flip the toggle switch while not holding the trigger down. If successful, the LED will turn on and stay on. This means you are ready to fire. Upon activation, the marker's anti-chop eyes are automatically active. There is no forced shot; the board automatically knows the difference between a ball being loaded and a ball not being loaded. If you wish to disable the eyes, hold the trigger down for however long you set the board to in register 7 (see below).
Holding the trigger down for 3/4 of a second will force a shot if nothing has loaded.

Solid LED: Ball loaded, marker ready to fire
Slow-blinking LED: Eyes disabled
No LED: No ball loaded

You should expect approximately 15,000 shots from a single 9 volt alkaline battery. Lithium batteries will last longer.

Programming:

To adjust the board's settings, the two DIP switches on the surface of the board must both be off. With the DIP switches on, the marker will be set to whatever ROF you last had, and locked in semiauto. You will not be able to adjust any settings while the board is locked.

To enter the programming mode, turn the board on while holding down the trigger. The LED will blink then turn off. At this point you are expected to select a register. To do this, click the trigger the appropriate number of times corresponding to the desired register. Once you have selected a register, the LED will blink a certain number of times to tell you what the current setting is for that register. You then click the trigger for the new setting. If you accidentially selected the wrong register, simply turn the board off then back on again to continue programming. Once you have entered the new amount for a register, wait one second and the board will store the new setting then blink the LED twice. After the new setting has been stored, you return to the "main menu" where you can select another register to adjust. If adjusting register 1 (firing mode), after you select the new mode the marker will exit the programming mode and the gun will then be ready to fire.

Register:	Function:	Settings:
1	Fire mode	1 for semiautomatic

		2 for autoresponse
		3 for X-code
		4 for fully-automatic
		5 for two-shot burst
		6 for three-shot burst
2	Rate of fire	Maximum ROF in balls-per-second while eyes are disabled
3	Debounce setting	Debounce setting in 1/3 millisecond increments
4	Solenoid dwell time	Solenoid dwell in milliseconds
5	Fire delay	Fire delay time in milliseconds
6	Eye delay	Eye delay time in milliseconds
7	Eye bypass time	1 for three seconds
		2 for four seconds
		3 for five seconds
8	ABS activation time	1 for ABS disabled
		2 for 5 seconds
		3 for 10 seconds
		4 for 15 seconds
9	ABS dwell time	Added dwell time in milliseconds for ABS firing
10	Eye sense	1 for reflective
		2 for beam-break
11	Intellifeed run time	1 for no no delay
		2 for 3-ms delay
		3 for 10-ms delay
12	AFA level	Rate of fire in balls-per-second for the AFA code (set to 1 to disable AFA)
13	Eye test	See description below

1-2. Autoresponse: This will fire the marker at the pull and release of the trigger.
1-3. X-code: Your first three shots are semiautomatic, however if the fourth is held down the marker will fire in fullyautomatic as long as the trigger is compressed.
1-5, 1-6. Burst modes: The marker will fire the number of shots if you hold the trigger down. If you release the trigger before all the shots have fired, the board will not fire the remaining shots.

3. Debounce setting: Time interval of no trigger events whereby the board will then start accepting new ones. Setting lower debounce settings will increase the chance of trigger bounce. Note that debounce is adjusted in 1/3 millisecond intervals...not full millisecond intervals.
4. Dwell time: Amount of time that the solenoid will remain open, that the bolt will remain forward.
5. Fire delay: Amount of time after the bolt cycles that the board will wait before it can cycle again. I do not suggest altering this setting unless you're trying to

expariment.

6. Eye delay: Amount of time after the ball has been detected that the marker will fire. This ensures you won't chop due during that split-second between when the eyes detect the ball and when it actually clears the top of the bolt.

7. Eye bypass time: Amount of time to hold the trigger down before the eyes will deactivate.

8. ABS activation time: Amount of time after the last shot that the ABS will engage and add miliseconds to the dwell for the next first shot.

9. ABS dwell time: Amount of dwell time that will be added to the normal dwell setting for the first shot when register 8 is enbled.

10. Eye type: This is the sense of voltage difference that will tell the board a new paintball is loaded and ready to fire. Your marker will only work with one eye sense if you have anti-chop eyes installed.

11. Intellifeed run time: Amount of time that the board will wait after firing before the intellifeed pulse is sent to the hopper.

12. AFA code: Once you reach the bps amount programmed into this register, the debounce will steadily lower until your maximum ROF setting is reached (or the feeding speed limit of your hopper). To use the AFA code, select semiautomatic as the firing mode. A setting of 1 for this register will disable AFA.

Predatorprogramming.wmv (right click, save as) - This is a video I made of an example of programming. In this video I increase the dwell by one millisecond, then select semiauto.

Eye Test:

This can be used to test the performance of your eyes with paint.
For beam-break eyes, select register 13 with nothing in the breech. The LED will remain lit so long as the eyes see nothing in the chamber (beam not broke). If the LED doesn't light, it could be because the eyes are misaligned.
For reflective eyes, select register 13 with nothing in the breech. The LED will remain lit so long as there is no ball detected; when you drop a ball into the chamber the LED will light if it is detected.