PM PULSE servos offer many user-configurable settings and parameters. These settings may be viewed and modified using the PULSE MANAGER software Graphical User Interface (GUI) and a PM USB adapter. The software for Windows PCs can be downloaded from ProMotionServos.com. For more information on the servos, please visit ProMotionServos.com
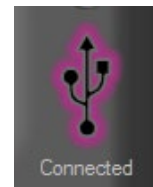
Installation and registration:
Steps:
1. **Download the software installation package**
2. **Run the software installation package**
3. **Complete the registration questions**
4. **Copy registration code from the email you will receive**
5. **Paste registration code into the software window.**

Download the software and double click on the file to run the installation program. The program will need to connect to the Hacker Motor server for registration, so an internet connection is required. Very slow internet connections such as with a cell phone hot spot, or anti-virus software may interfere with the connection. Please ensure a good connection and be sure to grant all necessary permissions to the PULSE MANAGER installation. Note that registration is required before the GUI will connect to servos.

Using the USB LINK:
Steps:
1. **Open the software**
2. **Connect USB Link**
3. **Connect the servo**

Always open the software before connecting the USB adapter. Once the ready screen is displayed, connect the USB interface to the computer.

The LED on the interface hardware will glow green when the connection is successful. The USB icon in the upper right corner of the GUI screen will also glow.

Once the USB device is recognized by the software, plug the servo lead into the interface and the software will open the servo settings tab screen automatically.

The servo confirms this connection with a tone sequence. Be sure to connect the servo to the USB link using the proper polarity and pin alignment.

The servo will draw power from the USB power bus of the computer, so the servo speed and torque will not be representative of the full power or speed of the servo in your installation.

In some installations, the power demanded by the servo upon initial power-up may exceed the USB port limits. If this occurs, simply unplug the USB adapter and servo and reconnect them in the sequence shown above.

Opening Screen. Choose whether connected servo should return to existing neutral, accept current position as new neutral, or do nothing.

MAIN SERVO SETUP SCREEN

Main Servo Setting Screen. Use tabs to move between the screens.

Changing PULSE-Manager Software Preferences

Click the Question Mark icon in the top left of the screen to open the main menu of the software where basic settings of the software interface may be changed.

SOFTWARE PREFERENCES

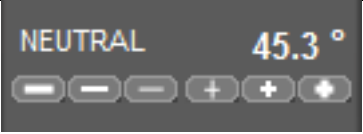|		
LANGUAGE:	Select your preferred language
SOUND:	Event sounds can be changed or turned off
APPEARANCE:	Choose between several color and appearance options.
UPDATE:	Check for updates to the GUI and/or servo
RESET:	Resets PULSE Manager to the original state.
ABOUT:	General information

Note: You must press the PROGRAM button on the PULSE-MANAGER screen to write any settings changes to the servo.

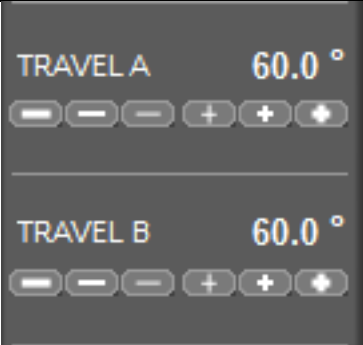PROGRAM **Otherwise the settings will be not saved in the servo.**

Note: The USB port does NOT supply full power to the servo, so full speed and torque are not developed. Use a Y harness and a suitable power source to simulate an actual installation while using PULSE MANAGER.
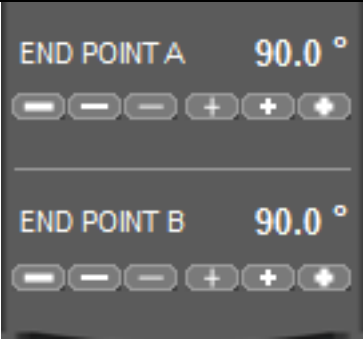
OPTION EXPLANATIONS:

NEUTRAL

NEUTRAL 45.3 °	SUBTRIM:	Adjusts the servo center position. Click on the + & - buttons to move the servo to the desired neutral position. Remember to click PROGRAM to write the changes permanently to the servo.

TRAVEL

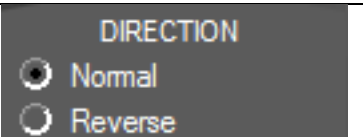|		
TRAVEL A 60.0 ° TRAVEL B 60.0 °	TRAVEL A & TRAVEL B	Travel A & B sets the maximum arm position of the servo for a direction of travel using the full resolution of the RX signal. PULSE servos may be set to rotate up to 5 full 360 degree rotations in either direction from NEUTRAL. Typical servos rotate 60 degrees from NEUTRAL. Use extreme caution when setting this value in excess of 90 degrees in a standard RC application. Typical examples for the use of this setting are to achieve extreme throws for 3D surfaces, flaps, or servo operated retractable landing gear. This setting can also be used to configure asymmetrical servo ranges for aileron differential or flap installations. This setting maintains full servo PWM resolution across the resulting range of motion.

END POINT

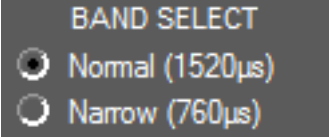|		
END POINT A 90.0 ° END POINT B 90.0 °	END POINT	Sets the absolute maximum angular position of the servo for a direction of travel regardless of the radio signal. Use this setting to prevent the servo from ever traveling beyond a certain position. Situations where this is useful are when using programmable transmitters with several programs operating on a specific surface. These functions, such as simultaneous RUDDER AND ELEVATOR on a V tail, may command arm positions that could lead to damage of the model. This setting prevents the servo from ever moving beyond the limit of the airframe or linkage.

DIRECTION

DIRECTION ● Normal ○ Reverse	DIRECTION	Toggles the direction of rotation for a pulse width increase or decrease.

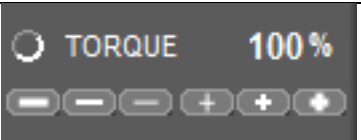|		Use this when the application requires the servo's motion for a given radio command to be in the opposite direction.

BAND SELECT

| | BAND SELECT | High speed receivers or gyros may utilize a different command for NEUTRAL position. Most applications require use of the NORMAL BAND setting.

Some high speed applications shift the NEUTRAL command to 750 ms. Most applications use 1500 ms. Consult the documentation on the device. |
|---|---|---|

SPEED

| | SPEED | Adjusts the speed of rotation of the servo.

Use with applications that require slow, steady motion rather than rapid motion. Example: Flaps or servo-operated landing gear. |
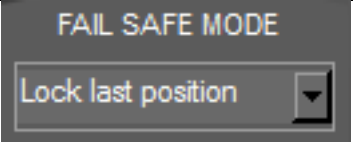|---|---|---|

TORQUE

| | TORQUE | Controls the percentage of maximum torque applied by the servo AFTER the servo torque exceeds this threshold setting. The reduced torque value and the threshold value are identical.

Limit torque to protect the model or servo when the motion is bound or otherwise limited. This setting is also useful to prevent excessive current draw in applications where the servo may not be able to reach the commanded position, such as in landing gear applications.

Note that the servo is likely powered by the USB port while this adjustment is being made. The USB port does NOT supply full power to the servo, so full speed and torque are not developed. Use a Y harness and a power source to simulate an actual installation. |
|---|---|---|

TORQUE DELAY

	TORQUE DELAY	Period of time the servo will wait to reduce torque after torque exceeds the TORQUE value

FAIL SAFE MODE

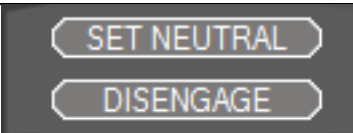|	Fail Safe Mode	Select the preferred behavior of the servo when radio PWM signal is lost. Settings: **Lock Last Position** - servo locks in current position Programmed Position – set using +/- buttons in PULSE Manager **Programmed Position w. Speed** – servo moves to the programmed position at a preset speed set below. **Motor Free** – the motor is disengaged and the servo may be moved to any position by the load **Motor Braking** – motor is disengaged, but some resistance is provided by the motor.

F.S. SPEED

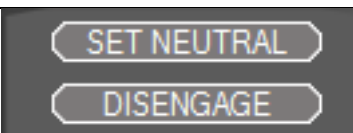|	F.S. SPEED	Select the servo speed for motion to failsafe position

F.S. POSITION

	F.S. POSITION	Select the servo Fail Safe position – REQUIRES FAIL SAFE POSITION TO BE SELECTED ABOVE.

SET NEUTRAL

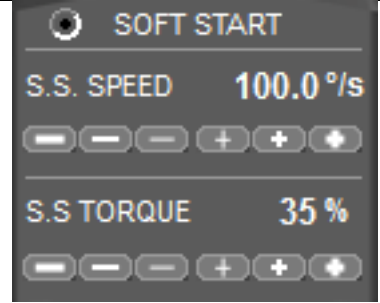|	SET NEUTRAL	PULSE servos' NEUTRAL position may be set anywhere in the 360 arc of rotation. Move the servo to the desired neutral position using the +/- buttons, or manually move it after pressing the DISENGAGE button below. Once the control surface is in the desired location, press SET NEUTRAL to program servo to accept the current arm position as the new NEUTRAL position.

DISENGAGE

	DISENGAGE	Allows the servo to "free wheel" in response to manual pressure. While servo is in this mode, the modeler can move it to the desired position to confirm endpoints or set the neutral position.

SOFT START

	SOFT START	Toggle SOFT START ON or OFF
	S.S. SPEED	Adjust the speed of travel of the servo when moving from unpowered position to commanded position on power up. Use this to help avoid accidental damage when surfaces or linkages are not free to move upon power up.
	S.S. TORQUE	Adjust the percentage of maximum torque applied by the servo as it moves from unpowered position to commanded position on power up. Setting a lower torque may help prevent the servo from tearing up the linkage or control horns if the surface is unable to move freely.

POSITION DIAL

	POSITION	This dial displays the actual position of the servo output shaft.

POSITION SLIDER

	SLIDER	Use this slider to simulate PWM pulse signal to the servo. Note that the pulse width is displayed in the bottom right corner.

SECURITY TAB SCREEN
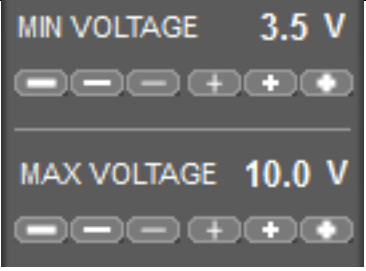

SECURITY TAB SCREEN.

MAX TEMP & TORQUE LIMIT

	MAX TEMP	Configure MAX TEMP to avoid servo damage. The factory default = 70C
	TORQUE LIMIT	Set TORQUE percentage to be applied if MAX TEMP is exceeded.

VOLTAGE MAX/MIN

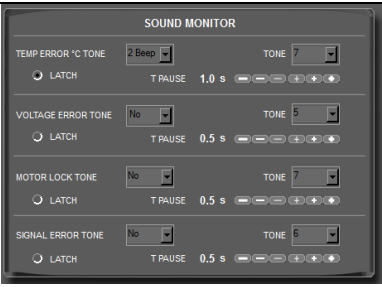|		
MIN VOLTAGE 3.5 V MAX VOLTAGE 10.0 V	VOLTAGE MIN / MAX ALARM	This setting configures the minimum voltage alarm trigger point. Maximum voltage alarm point. Servo will stop moving motor while maximum voltage is exceeded. Default setting is 10V.

BIND RELIEF

BIND RELIEF 50 %	BIND RELIEF	Set TORQUE applied by the servo in cases where the arm is blocked for 3 seconds from reaching the commanded position.

SOUND MONITOR

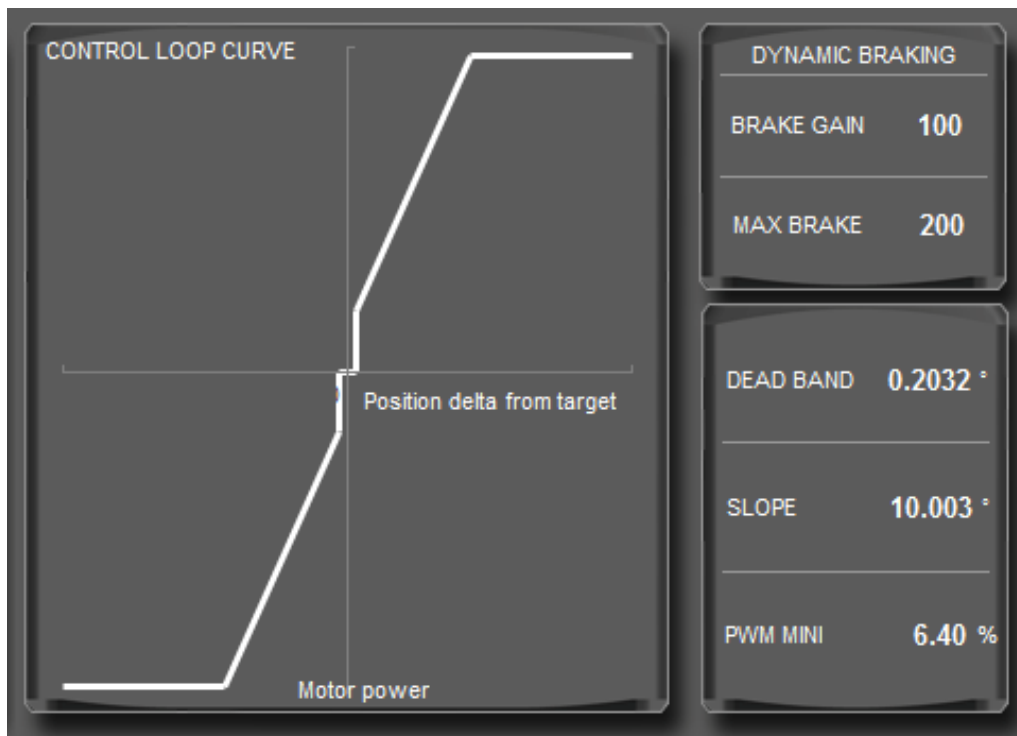|		
SOUND MONITOR TEMP ERROR °C TONE 2 Beep TONE 7 LATCH T PAUSE 1.0 s VOLTAGE ERROR TONE No TONE 5 LATCH T PAUSE 0.5 s MOTOR LOCK TONE No TONE 7 LATCH T PAUSE 0.5 s SIGNAL ERROR TONE No TONE 6 LATCH T PAUSE 0.5 s	SOUND MONITOR	Configure error messages beeped out by the servo. When LATCH is selected, servo will beep alarm tones continuously until servo is powered off and back on. T. PAUSE configures the time between servo beeps

ADVANCED SETTINGS SCREEN

Advanced Setting Screen displays data about the control loop settings.

	CONTROL LOOP SETTINGS	**Standard** – good balance between force and accuracy. Best for applications with high vibration. USE THIS SETTING IN PULL-PULL APPLICATIONS **Performance** – the servo runs very smoothly and evenly all the way. Perfect for mechanical retracts or special applications. **Accurate** – biased toward tight dead band, increased power around target position. Improves holding power. **Torque** – biased toward torque at target position. Best for heavy loads. **Competition** – all settings are set to maximum. Highest power, smallest deadband.

CONTROL LOOP CURVE DISPLAY

Fields display data related to the control loop in the servo.

TELEMETRY

Telemetry screen displays data from the servo.
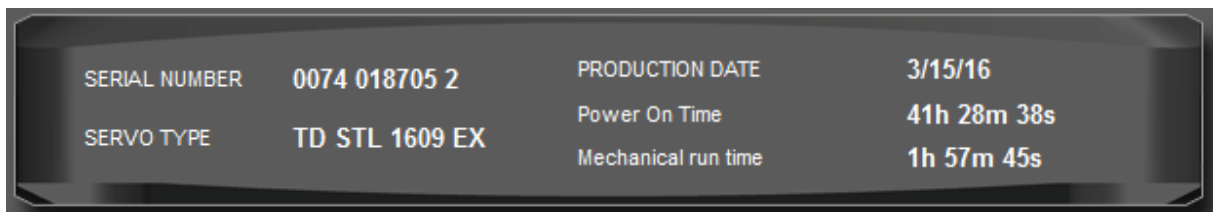
	Telemetry On/Off: This setting toggles the servo's ability to send data packets back to a JETI receiver. Note that the JETI functionality requires specific JETI products with specific firmware. JETI expects to release this firmware SUMMER 2017.

INFO SCREEN

The INFO screen gives access to firmware information, update and reset capabilities.

INFO

General information about the connected servo.
Power On Time: this figure is a total of the time that the servo is powered.
Mechanical Run Time: this figure is the total time that the servo motor is powered.

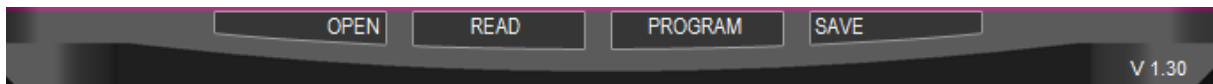This setting allows the user to change the name of the servo. This is the name displayed in PULSE MANAGER

Load Factory Setting button: Use this function to reset the servo to factory settings. This will over-write all changes that may have been made to the servo settings.

!!! Note: All settings that you have made to the servo will be lost when using this reset!!!

CHECK FOR UPDATE BUTTON:
Use this function to check for servo firmware or PULSE MANAGER updates.

OPEN BUTTON:
Servo settings may be stored to a file and saved. Use the OPEN button to browse, select and open a servo settings file. The settings will be displayed in PULSE MANAGER. If you wish to write these settings to the servo, you must click the PROGRAM button.

An example would be to program multiple servos with the same settings, such as mechanically coupled rudder servos. Program one servo then copy that program to other servos.

READ BUTTON: Data from the connected servo will be read from the servo and displayed in PULSE MANAGER. This will replace any settings made in the PULSE MANAGER.

PROGRAM BUTTON: Saves all values in the servo.

SAVE : After setting values of the servo the datas can be stored on the PC and be transferred later on "OPEN" in a servo of the same type.