Fluctuating Watts and/or RPM Readings

The MPower Echelon console is designed to display RPM (cadence) and when combined with the Power Upgrade the system will display power (watts).

If the system is displaying inaccurate or fluctuating RPM or watt readings, it is important to look at all possible causes when troubleshooting.

Possible Causes are:
- Bike (or floor) is not level
- Aggressive rider movement
- Gap between flywheel and RPM sensor too large
- Loose cable connections
- Brake zero angle is off (software version 19 and higher)
- Power Sensor firmware version

Note: Some fluctuation of watt readings should always be expected because it is rare for a rider to be pedaling perfectly consistent. Riders should not expect to see a watts number that stays at one constant value.

Bike is Not Level
The power sensor contains an accelerometer that is used to determine the position of the brake mechanism. If the bike (or floor) is not level and bike wobbles during use, the accelerometer will sense this and cause the values to fluctuate.

Verify that the bike is firmly positioned on the floor. Make adjustments to the feet as necessary to ensure the bike will not wobble. If the floor is uneven, you may need to position the bike in another area where the floor is level.
**Troubleshooting**

**Aggressive Rider Movement**
Another possible cause for fluctuation in the system is aggressive rider movement. Just as an uneven (wobbling) bike can affect the accelerometer, so can aggressive rider movements.

It is important to educate riders with aggressive movement on how this is affecting the system so they can make adjustments to their riding style.

**Loose Cable Connections**
There are cable connections on the RPM sensor (Fig. 1), the Power Sensor (Fig. 2) and the Echelon console (Fig. 3). A loose/partially connected cable at any point could cause the noise in the system which will affect the information being display, check each connection by disconnecting and reconnecting them all.
RPM Sensor Gap
If the gap on the RPM sensor is slightly too large, the RPM values may fluctuate. There must be approximately 1mm-2mm between the flywheel and the RPM sensor (Fig. 4). If the gap is greater than 2mm, make necessary adjustments.

![Fig. 4](image)

Brake Zero Angle is Off
Starting with Echelon console software v19 and higher the Echelon console software allows for watts offsets that are based on physical & true zero brake angle points. If properly configured the angle offsetting improves the accuracy of the watts measurement readout. Follow the instructions attached at the back of this troubleshooting guide. If the console software is prior to V19, update the console. The latest console software can be found on the Schwinn web site. Note: A calibration tool is required.

![Calibration Tool PN: 740-8607](image)

Updated Power Sensor Firmware
Enhancements to the filtering of the power sensor firmware were implemented after serial number 0200003IDT2014001. The serial numbers are located on the Power Sensor sticker (Fig. 5).

![Fig. 5](image)

The enhanced filtering significantly improves the stability of the watts readout. Even with the enhancements, a wobbly bike and/or aggressive rider movement can still cause watts readings to vary within a range even when the rider uses a consistent resistance level.
Brake Angle Zeroing for Watts Offset

Memo:
To ensure watts readout accuracy, the echelon console firmware allows for software offsets that are based on physical & true zero brake angle points. If properly configured the angle offsetting improves the accuracy of the watts measurement readout. In order to properly offset the console values; follow the instructions within this document.

Instructions:
1. With the console off, press the “LIGHT” button to turn on the console and follow the on screen instructions.
2. After calibrating the console at initial startup with zero brake knob resistance, press and hold the “STAGE” and “END” buttons (Fig. 1) for six seconds until the maintenance mode screen appears (Fig. 2).

3. Scroll through the maintenance mode settings using the “END”button until setting: SYSTEM (Fig. 3) is reached. Press the “LIGHT” button to enter the system sub-settings. Under the sub-settings option: SYSTEM —SUMMARY (Fig. 4) will appear & flash. Press the “LIGHT” button to view the firmware version (Fig. 5) that is displayed under this system summary setting.

Verify that the firmware version is 1.7 or higher. A firmware prior to this version will not allow for angle offsetting.
4. Press the “LIGHT” button to exit from SYSTEM sub-settings and have access to the main maintenance mode.

5. Scroll through the maintenance mode settings using the “END” button until setting: CALIBRATE (Fig. 6) is reached. Press the “LIGHT” button to enter the calibrate sub-settings and use the “END” button to navigate through the sub-setting options until: CALIBRATE—CURRENT ANGLE (Fig. 7) is reached and flashing. Press the “LIGHT” button to view the current angle value which should be zero (Fig. 8) with no resistance applied to the brake knob.

6. Place the calibration tool (Fig. 9) onto the flywheel rim surface as shown.

7. Rotate the flywheel back until the calibration tool rests against the curvature of the magnets on the brake carriage (Fig. 10).

NOTE
In the rare event that the calibration tool cannot be used because the brake carriage sits below the rim profile of the flywheel when there is zero brake resistance present; skip to step 9.
8. Rotate the brake knob clockwise (Fig. 11) until full resistance is applied and the knob can no longer turn. Do not force resistance beyond the stop point.

Fig. 11

9. Record the new current angle (Fig. 12) if the value changed from zero. Note that it may take several seconds for the new angle value to appear and stabilize.

Fig. 12
10. Review the table (Fig. 13) below to lookup the Angle Offset Percentage required to offset the console firmware based on the Current Angle that was obtained in step 8.

If the calibration tool could not be used in step 6 due to carriage interference use current angle “A” from the table below to enter an estimated positive angle offset.

<table>
<thead>
<tr>
<th>For Current Angle Value</th>
<th>Enter Angle Offset %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enter a positive offset value. This number should be estimated to reflect the plane where the magnets and rim of the flywheel would coincide.</td>
</tr>
<tr>
<td>A</td>
<td>Contact our customer service group for further details, explanation, and assistance if required.</td>
</tr>
<tr>
<td>0.1</td>
<td>-2</td>
</tr>
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<td>-4</td>
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</table>

Fig. 13
11. Exit from the CALIBRATE—CURRENT ANGLE sub-setting (Fig. 14) by pressing the “END” button at which point CALIBRATE will display on the screen (Fig. 15). Press the “LIGHT” button to enter and view the sub-settings where: CALIBRATE—UP PASS will display on the screen (Fig. 16). Using the “END” button scroll through the available sub-settings until: CALIBRATE—ANGLE OFFSET is reached (Fig. 17).

12. Press the “LIGHT” button to enter into the setting: CALIBRATE—ANGLE OFFSET where: ANGLE OFFSET 0% will be displayed (Fig. 18).

13. Using the “END” or “STAGE” buttons, reach the required +/- Angle Offset percentage value (Fig. 18) that was obtained from step 9.
14. Press the “LIGHT” button to save the firmware’s new angle offset and have the main setting: **CALIBRATE** display on the screen (Fig. 19). Use the “**END**” button to scroll to setting: **EXIT** (Fig. 20) and press the “**LIGHT**” button to exit out of the maintenance mode and bring you back to the initial startup screen (Fig. 21) which will allow for the commencement of workouts with the updated offset angles.

15. Remove the calibration tool from the flywheel and commence workouts as normal.

### Calorie Calculation Note

Calories are calculated in the console and are based on the watts output value; not a riders heart rate. Therefore anytime the brake angle is adjusted to better calculate watts output – the calorie value will also be affected in correlation to the new offset percent value.

In this case, the displayed calorie count is solely based on work output fed to the console.

It is normal for there to be differences in between “Watts based calorie expenditure” (*this system*) and “Heart rate based calorie expenditure” (*chest strap to riders watch system*).