



## Power Supplies for Motorized Fitness Equipment Application

By: Brian Lu/Technical Dept

[brian@meanwellusa.com](mailto:brian@meanwellusa.com)

Home-Fitness equipment is one of the blooming industries during the Covid-19 Pandemic due to the closure of public gyms or fitness centres. The closure induced high demand for Home-Fitness Equipment especially Motorized Fitness Equipment such as Treadmills or Cross trainers with LCD displays for video training or live streaming purpose. These Motorized Fitness Equipment often utilize two separate AC/DC power supplies to drive the motor and power the LCD display that three common design references that are directly related to the built-in AC/DC power supplies.



Motorized Fitness Equipment components & Regulatory Requirements	Power Supplies requirements
DC motor	Fanless or Fan on/off control feature
Earth Leakage Current	< 0.75mA
LCD Display	12~15Vdc/60W

- DC motor:** the main characteristic is that it pulls peak power for a few milliseconds to startup. After starting up, it draws about 50% less power. It's depended on the power rating of the built-in motor to choose a suitable power supply. For instant, Treadmill or Cross Trainer motor is typically 200W and often powered by a 350W~400W rated power supply. Multi-function fitness equipment utilized a higher power motor that prefers constant current limiting output power supply up to 1000W. Moreover, due to Home-Use, a fanless or fan on/off controlled power supply is necessary to diminish audible noise while the equipment is idle.
- Earth Leakage current:** similar to other home appliances, safety regulations require the equipment leakage current lesser than 0.75mA per UL1764 which is the total leakage current of the two power supplies for the DC motor and the LCD display.



**3. LCD Display:** besides the video training and live streaming purpose, the display is also used to control the equipment with a total power demand of 40~60W. Class II input power supply is usually chosen because its leakage current is minimal which does not increase the total leakage current of the equipment to pass the UL1764 leakage current requirement above.

In summary, Motorized Fitness Equipment requires a fanless or fan on/off control feature and low leakage current power supply. Therefore, when selecting power supplies for the application, it's suggested to consider the aforementioned requirements. MEAN WELL product lines offer various product series that is highly recommended for the application. For more product information please refer to the table below.

Motorized Fitness Equipment Components	Power Supply	
	Series	Features
DC motor	UHP-350/500/750/1000 HEP-320/480/600/1000 RPS-400/500	<ul style="list-style-type: none"><li>▪ Fanless design</li><li>▪ &lt; 0.75mA leakage current</li></ul>
	MSP-450/600/1000	<ul style="list-style-type: none"><li>▪ Fan on/off control design</li><li>▪ &lt; 0.75mA leakage current</li></ul>
LCD Display	IRM-45/60 EPS-45S/65S	<ul style="list-style-type: none"><li>▪ Fanless design</li><li>▪ Class II input</li><li>▪ Miniature</li></ul>