

Design Guide for Home Healthcare Devices

By Ji-Ming Li



Innovative & High Quality
Electrical Components

Standard - Custom Design - Military Grade

IEC 60601-1-11

- IEC 60601 applies technical standards to medical electrical equipment.
- Published by the International Electrotechnical Commission (IEC), the standards are regularly updated and restructured.
- Standard 1-11 applies specifically to medical electrical equipment and systems used in the home.
- IEC 60601-1-11 and IEC 60601-1-2, 4th ed. help to ensure the safety and performance of medical electrical equipment used in the home.

Over the years, compliance for home healthcare devices has become more stringent. And for good reason.

Mounting Demand

The need for home healthcare has increased dramatically over the past decade, driven by a variety of factors:

- By 2050, the number of people over 65 is forecast to grow to 1.5 billion (from 523 million in 2010)
- Nearly half of all Americans suffer from at least one chronic ailment
- The cost of home healthcare is far less than hospital or nursing home care
- Home care adds to patients' comfort and privacy, while speeding recovery



Challenges in the Home

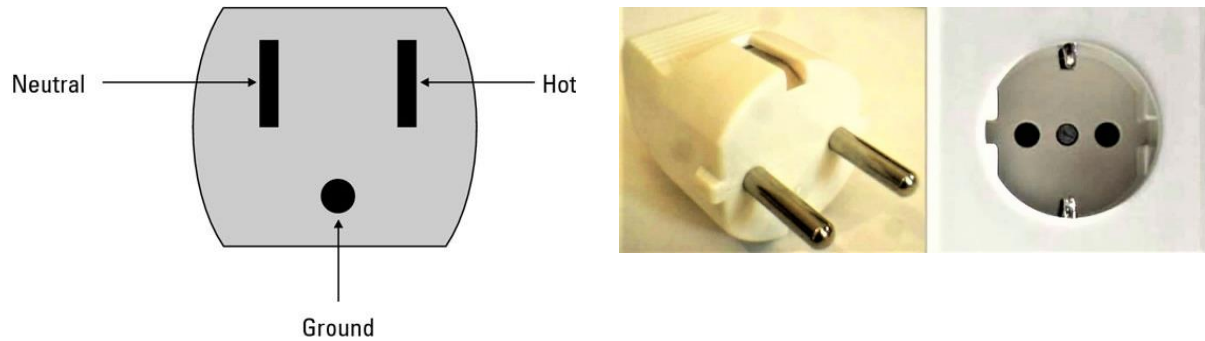
In-home care offers a variety of challenges not found in a controlled setting, such as a hospital or clinic.

- EMI interference from appliances
- Environmental unpredictability from children, pets, dust or moisture
- Lack of supervision
- Unprofessional users

For these reasons, unless installed permanently, all electrical medical equipment used in the home must be either Class II (held to a higher level of assurance than Class I devices), or battery operated.



USA vs European Market



The European market differs from the U.S. market in several distinct ways.

And both markets provide challenges to electrical components used in the home healthcare industry.

- Forty percent of homes in the US have no reliable ground wires
- Sixty percent of homes in Europe have no reliable ground wires
- US nursing homes are defined as “home healthcare”
- European nursing homes are defined as “professional healthcare,” so IEC 60601-1-11 covers US nursing homes, but not European



The Solution

Tri-Mag Power Supplies and DC-DC Converters, Curtis EMI Filters



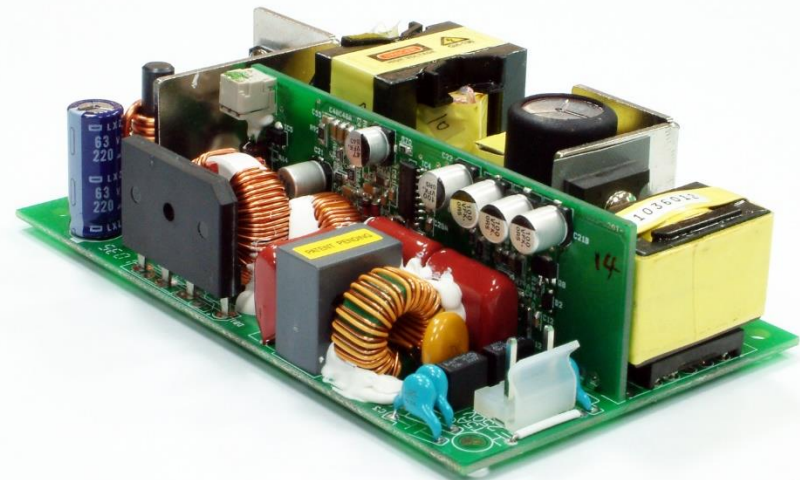
All Tri-Mag power supplies, DC-DC converters, and EMI filters meet or exceed IEC 60601-1-11 requirements

Ease your compliance worries.

Use Curtis/Tri-Mag power supplies, DC-DC converters and EMI filters.

Tri-Mag offers a complete line of external and embedded medical-grade Power Supplies, and DC-DC Converters.

- Power Supplies from 6 to 600 watts
- DC-DC converters from 1 watt to 100 watts
- Minimum isolation voltage from 1.5KV to 6KV
- EMI filters from 3A to 20A



Applications

Curtis/Tri-Mag offer a wide range of power supplies, DC-DC converters, and EMI filters for a variety of medical applications:

- Diagnostics - Medical imaging, CT scanning, ultrasound, blood analysis
- Monitoring - Blood pressure monitoring, ECK, EEG
- Laboratory - Chemical analysis, laboratory automation
- Home Patient Care - Medical bed, CPAP, infusion pump, ACT vest
- Dental - Dental chair, dental LCD display, oral care equipment

Curtis, Tri-Mag's parent company, offers a full line of standard filters and custom engineering capabilities.



Summary

- The Home Healthcare market will continue to expand through 2050
- Manufacturers of products for the home market face challenges not found in professional environments
- Rigid regulatory requirements put pressure on manufacturers to create products that remain safe, and enhance the comfort and well-being of the end users
- The European market poses unique challenges, with unique regulatory requirements
- To help ease your compliance process, use Curtis/Tri-Mag power supplies, DC-DC converters, and EMI filters for all your medical electronic devices and systems



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