

NFPA99-2015 edition (National Fire Protection Association) medical equipment

Requirements for health care facilities.

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All reference clauses are from the NFPA99-2015 standard.

The NFPA99-2015 standards for health care facilities and the requirements of IEC60601-1 3rd edition are similar and use common language.

It is common practice to use Personal Computer based equipment in conjunction with approved medical devices such as patient monitors and therapeutic devices in patient care areas.

Auxiliary devices connected to patient connected devices are held to the same safety standards as patient connected devices in terms of leakage/touch current.

NFPA99-2015 clause 3.3.128 defines the “patient vicinity” as an area bound by an extension within 6 feet of the bed, chair or table.

A device connected to a medical device within the 6 feet patient vicinity distance is subject to the requirements of leakage current testing (touch current) even though the device may be located further than 6 feet from the patient.

For example, if a patient monitor is connected to a patient and the patient monitor is also connected to personal computer type device that is located beyond 6 feet that PC is subject to the leakage/touch current requirements.

The rationale for this is that an auxiliary device may cause the patient connected device to have fault currents beyond the safe limits.

Clause 10.2.5 states that the touch current shall be less than 500uA (previous editions were less than 300uA). The 3rd edition of IEC60601-1 medical standard has renamed chassis leakage current to touch current.

If multiple devices are connected and have their own power cord the leakage/touch current is measured individually (clause 10.3.5.1).

Some states have mandated NFPA99 others have not. It would be prudent to check and see if your state has mandated NFPA99 compliance.

Since there is a precedent standard for safety which includes leakage/touch current it is not worth the liability to not comply with the leakage/touch current requirements for PC based devices if they are connected to Patient monitoring or therapeutic devices.

There are several ways to meet the leakage/touch current requirements,

1. Medical Grade PC power supply
2. Medical Grade Isolation Transformer

Isolation transformers can be bulky and have a tendency to be damaged because they are mounted externally. There is also a slight risk that someone could unplug the device from the isolation transformer and insert directly into a non isolated outlet.

A much better solution is a medically certified PC power supply with an ATX or SFX form factor which is built in to the PC chassis.

Maintaining low leakage/touch current is critical in mitigating shock hazards.

If you need additional information on medical standards requirements or medical PC power supply applications please contact us at:

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