



Why Use a Low-voltage monitor in the Operatory?

Codes and regulations for electrical systems in the dental operatory

Consumer-grade PC monitors which are designed for home and office use store the power supply module inside the monitor housing, which brings 120 volts all the way into the monitor. The dental operatory has stricter codes that differ from the rest of the dental office.

Electrical safety codes that apply to the dental operatory:

The **National Fire Protection Association Code 70**, also called the National Electrical Code (**NEC70**):

This code sets the standard for all electrical work to regulate fire safety and personal safety in offices, homes, and **health care facilities**.

NEC has a separate section for 'health care facilities' as, "buildings or portion of buildings in which medical, **dental**, psychiatric, nursing, obstetrical or surgical care are provided."

The '**patient care area**' is defined as, "any portion of a health care facility wherein patients are intended to be examined or treated." The patient care area is also subject to the presence of liquid, so it is also classified as a '**wet Location**.' In cases where the room is large, it has been recognized that only the area around the patient should be covered under these stricter rules. The code cordons off part of the room as the '**patient vicinity**'. It is defined as an imaginary enclosed space *6 ft horizontally from the patient and 7 ½ ft above the floor*.

This is where the fault lies with 120-volt power. First, wet locations and patient care areas require that all 120-volt power sources shall have ground fault protection (*NEC70 Section 517-20*). However, very few wall outlets are connected to circuit breakers that have this feature. Second, all the connections and cables that are pulled in with a 120-volt circuit in the same raceway as VGA, HDMI, Video, Audio, Coaxial cables must also be insulated as if they were 300-volt insulated cables even if they remain 120-volt (*NEC70 Article 300.3*).

What is the advantage of using a low-voltage monitor?

Low-voltage monitors (under 50 volts) do not have the same restrictions as 120-volt devices in the operatory (*NEC70 Article 525*). DENclarity is a 19-volt monitor that can be used in the dental operatory environment as a simpler way to comply with codes and regulations while reducing the risk to patients.