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Technical Data Sheet

Electromagnetic Interference & Cable Glands Explained

The cable gland standard BS EN IEC 62444 states that cable glands, in normal use, are considered to be passive in respect of electromagnetic influences.

All electronics, electrical systems and cable runs emit magnetic and electrical energy, if this energy unintentionally interacts with another device and causes it to malfunction, then it is considered interference. Most EMI is caused by frequencies that fall between 1 KHz and 10 GHz, and this range is known as the RFI band, which includes radio and audio frequencies.

To protect equipment from EMI the earthing/grounding of enclosures and connections has to be engineered so that it has in its simplest form a seamless electrical continuity from point A to point B. The objective is to protect the interior of the system from external environment RFI influences (Susceptibility) and at the same time to protect the external environment from the system (Emission).

Magnetic interference can only be shielded by a ferrous screen of some thickness such as steel enclosures. With electrical energy the susceptibility of a system depends on there being a slot or antenna great than 1/4 wavelength of the frequencies of concern. The reverse also applies what frequencies should the equipment not emit so as to not cause interference to other equipment. The power of the signal plays an important part, the stronger the emission and susceptibility and more effective shielding is required. Lower frequencies can be shielded by single braid, medium frequencies double braid and higher frequencies should use foil or combinations of the two. The weak point on any cable system to an enclosure is the termination of the screen or shield. The above is the briefest description of the subject. EMI/RFI/EMC is a specialised field of engineering and expert advice should always be sought for designing efficient and effective systems.

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