

Magnetic Shield Model 51001R



Description

The Model 51001 Magnetic Shield is a two-piece shield that minimizes the effects of magnetic field noise on the FTT-10A transceiver. For environments where such noise cannot be shielded at its source, the Model 51001R shield can improve FTT-10A operation when magnetic field noise becomes problematic.

Model 51001R is compliant with the European Directive 2002/95/EC on the restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment.

Stray Magnetic Fields

All transformer-based transceivers, like the FTT-10A, are vulnerable to sufficiently large stray magnetic fields. In most environments, stray magnetic field noise is not a concern for the FTT-10A transceiver. However, there are environments where large magnetic fields can couple onto the FTT-10A and interfere with communications. The FTT-10A transceiver is least sensitive to stray vertical magnetic fields, and most sensitive to stray horizontal magnetic fields (i.e., fields which are parallel to the printed circuit board [PCB] on which the transceiver is mounted).

Very strong magnetic fields in the horizontal plane of the FTT-10A can interfere with network communications. Sources of stray magnetic field noise should therefore be kept

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- ▼ Reduces susceptibility of FTT-10A to strong magnetic fields
 - ▼ Two-piece design includes inner Co-Netic and outer Netic shields
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as far away from the FTT-10A transceiver as possible and any unavoidable stray magnetic fields should be oriented vertically with respect to the transceiver. The best solution to stray magnetic field problems is to quiet the source of the noise, e.g., by shielding switching power supply inductors.

A magnetic shield may be necessary in environments where high ambient magnetic fields cannot be avoided. This is especially true when the base frequency of the interfering source is near, or within, the range of 10kHz to 300kHz, since this range is used for communication signaling by the FTT-10A. Although it is usually more effective to shield the source of the noise, in some cases it may not be possible, sufficient, or cost effective to shield the noise source. In such cases, the Model 51001R Magnetic Shield can be used to decrease the susceptibility of the FTT-10A to stray magnetic fields.

Application and Installation

The inner shield is mounted directly over the FTT-10A, which is itself usually mounted on a PCB. A small amount of non-critical adhesive, such as RTV, may be used on the interior surface of the shield to fasten the shield securely to the FTT-10A plastic shell. The outer shield is then mounted in a similar way over the outside of the inner shield, forming a nested structure.

Both materials used in the shields are electrically conductive and therefore the shields should not be in contact with the PCB. A clearance of 0.020 to 0.040 inches (0.5 to 1.0mm) should be provided between the bottom of the shield and the PCB so that an electrostatic discharge path is not created between the shield and the PCB.

Specifications

Function	Description
Magnetic shield	Provides additional protection from stray magnetic fields
Material	
Inner shield	Stress Annealed Co-Netic Alloy, unpainted
Outer shield	Stress Annealed Netic Alloy, painted glossy black
Internal Dimensions	
Inner shield	18.3mm x 13.8mm x 6.1mm (0.720" x 0.542" x 0.240")
Outer shield	20.1mm x 15.8mm x 7.1mm (0.790" x 0.623" x 0.280")

Ordering Information

Product	Echelon Model Number
Magnetic Shield	51001R

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