



MAK – Modular Attachment Kit

The Complete EMC Solution



- Modular EMP and EMI protection
- Best protection for personnel and equipment against transient overvoltages and electromagnetic disturbances
- Provides single PoE (Point of Entry) for mobile and fixed shelter systems and vehicles
- Modular system for highest flexibility and reduced maintenance costs
- Universal mechanical concept with high degree of shielding

Protects Against HEMP/NEMP/EMP, Surge and EMI (Electromagnetic Interference)

The MAK – Modular Attachment Kit – represents a modern solution for protecting personnel and sensitive electronic equipment against the effects of HEMP/NEMP, lightning overvoltages and also electromagnetic interference. The protection functions are paired with a very high level of flexibility due to a clever mechanical concept. Modules mounted in a frame can easily be interchanged and replaced by others to obtain a very high degree of flexibility.

Designed to meet very demanding requirements of military standards or civil lightning protection regulations, the MAK is a completely universal concept. Within its mechanical boundary it is completely flexible regarding protection behaviour as well as regarding choice of connectors. Based on the single PoE concept the MAK represents the best physical possibility to feed power supply, data and high frequency signals through a single entrance panel into an architectural structure like a container, mobile shelter or a vehicle.

The MAK system is defined as the standard for mobile systems (containers/ shelters) and special vehicles of the Swiss Armed Forces. Comprehensive investigations done by the Defence Procurement Agency lead to this decision.



Mechanical Concept

The MAK is divided into the MAK box and a defined number of modules fit into the box. The box itself can be fixed inside a frame by means of predefined screwing holes. The frame is a seamless part of the shield (Faraday cage). The frame can be designed customer specific and may also contain door, lock, handle and also a cable feed-through to allow operation with closed door.

The MAK box size is derived from 19" rack systems and has a width of a multiple of 5.08 mm (1 HP) whereas the inner height is fixed with 3 U (3 x 44.45 mm).

The Modules

A variety of standard modules is available. Customer specific needs concerning the signal itself or the connector to be used can be implemented easily. The width of a module depends on the electrical specifications and on the size of connectors. From power line modules over signal and data line modules to high-frequency signal modules many types are on stock. Applications include interfaces for analog or digital telephone, Ethernet modules, shortwave/VHF/UHF radio communication and satellite receive/transmit lines just to name a few.







Consequently all modules have a width of 7 HP or a multiple thereof to fully complete the MAK box. If fewer modules are required additional fill-up (dummy) modules have to be added to maintain proper shielding of the whole system. For later changes or add-ons these fill-up modules can easily be replaced by additional protection modules.

The unprotected side of the module allows all kind of cables/wires and fibre optics to be connected and is located on the "door"-side of the MAK. The protected side is inside the shielded area and offers connectors or cables to attach the equipment to be protected.

Shielding and EMC Behaviour

Properly designed modules allow shielding of a protected zone against radiated electromagnetic fields as well as against conducted transient and continuous wave disturbances. The MAK – an ideal way of implementing the single point of entry concept within a system design.



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