HANDLING, INSTALLATION AND CASE DIMENSIONS

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1. GENERAL CONSIDERATIONS

1.1 Receipt of relays

Protective relays, although generally of robust construction, require careful treatment prior to installation on site. Upon receipt, relays should be examined immediately to ensure no damage has been sustained in transit. If damage has been sustained during transit a claim should be made to the transport contractor and AREVA T&D should be promptly notified.

Relays that are supplied unmounted and not intended to be installed immediately should be returned with their protective polythene bags.

1.2 Electrostatic discharge (ESD)

The relays use components that are sensitive to electrostatic discharges.

The electronic circuits are well protected by the metal case and the internal module should not be withdrawn unnecessarily. When handling the module outside its case, care should be taken to avoid contact with components and electrical connections. If removed from the case for storage, the module should be placed in an electrically conducting antistatic bag.

There are no setting adjustments within the module and it is advised that it is not unnecessarily disassembled. Although the printed circuit boards are plugged together, the connectors are a manufacturing aid and not intended for frequent dismantling; in fact considerable effort may be required to separate them. Touching the printed circuit board should be avoided, since complementary metal oxide semiconductors (CMOS) are used, which can be damaged by static electricity discharged from the body.

2. HANDLING OF ELECTRONIC EQUIPMENT

A person's normal movements can easily generate electrostatic potentials of several thousand volts. Discharge of these voltages into semiconductor devices when handling electronic circuits can cause serious damage, which often may not be immediately apparent but the reliability of the circuit will have been reduced.

The electronic circuits are completely safe from electrostatic discharge when housed in the case. Do not expose them to risk of damage by withdrawing modules unnecessarily.

Each module incorporates the highest practicable protection for its semiconductor devices. However, if it becomes necessary to withdraw a module, the following precautions should be taken to preserve the high reliability and long life for which the equipment has been designed and manufactured.

1. Before removing a module, ensure that you are at the same electrostatic potential as the equipment by touching the case.
2. Handle the module by its frontplate, frame or edges of the printed circuit board. Avoid touching the electronic components, printed circuit track or connectors.
3. Do not pass the module to another person without first ensuring you are both at the same electrostatic potential. Shaking hands achieves equipotential.
4. Place the module on an antistatic surface, or on a conducting surface which is at the same potential as yourself.
5. Store or transport the module in a conductive bag.

If you are making measurements on the internal electronic circuitry of an equipment in service, it is preferable that you are earthed to the case with a conductive wrist strap. Wrist straps should have a resistance to ground between 500kΩ – 10MΩ.

If a wrist strap is not available you should maintain regular contact with the case to prevent a build-up of static. Instrumentation which may be used for making measurements should be earthed to the case whenever possible.

More information on safe working procedures for all electronic equipment can be found in BS5783 and IEC 147-OF. It is strongly recommended that detailed investigations on electronic circuitry or modification work should be carried out in a special handling area such as described in the above-mentioned BS and IEC documents.

3. RELAY MOUNTING

Relays are dispatched either individually or as part of a panel/rack assembly.

If an MMLG test block is to be included it should be positioned at the right-hand side of the assembly (viewed from the front). Modules should remain protected by their metal case during assembly into a panel or rack.

For individually mounted relays an outline diagram is supplied in section 6 of this chapter showing the panel cut-outs and hole centres.

4. UNPACKING

Care must be taken when unpacking and installing the relays so that none of the parts is damaged or the settings altered. Relays must only be handled by skilled personnel. The installation should be clean, dry and reasonably free from dust and excessive vibration. The site should be well lit to facilitate inspection. Relays that have been removed from their cases should not be left in situations where they are exposed to dust or damp. This particularly applies to installations which are being carried out at the same time as construction work.

5. STORAGE

If relays are not to be installed immediately upon receipt they should be stored in a place free from dust and moisture in their original cartons. Where de-humidifier bags have been included in the packing they should be retained. The action of the de-humidifier crystals will be impaired if the bag has been exposed to ambient conditions and may be restored by gently heating the bag for about an hour, prior to replacing it in the carton.

Dust which collects on a carton may, on subsequent unpacking, find its way into the relay; in damp conditions the carton and packing may become impregnated with moisture and the de-humifier will lose its efficiency.

Storage temperature : –25°C to +70°C.

6. DIMENSIONS

6.1 Connection of power terminals, and Signals terminals

The individual equipment are delivered with sufficient M4 screws to connect the relay via annular terminals, with a maximum recommended of two annular terminals per contact.

If necessary, AREVA T&D can provide annular terminals to crimp. 5 references exist according to the section of the wire (see below). Each reference corresponds to a sachet of 100 terminals.

Push-on connector 4.8 x 0.8 (wire size 0.75 - 1.5mm²)
AREVA T&D'S Automation & Information Systems Business
reference: ZB9128 015

Push-on connector 4.8 x 0.8mm (wire size 1.5 - 2.5mm²)
AREVA T&D'S Automation & Information Systems Business
reference: ZB9128 016

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M4 90° Ring Tongue terminal (wire size 0.25 - 1.65mm²)
AREVA T&D'S Automation & Information Systems Business reference,
Stafford part number ZB9124 901

M4 90° Ring Tongue terminal (wire size 1.5 - 2.5mm²)
AREVA T&D'S Automation & Information Systems Business reference,
Stafford part number ZB9124 900

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To insure the insulation of the terminals and to respect the security and safety instructions, an isolated sleeve can be used.

We recommend the following cable cross-sections:

- Auxiliary sources Vaux : 1.5 mm²
- Communication Port see paragraph 6.2
- Other circuits 1.0 mm²

Because of the limitations of the annular terminals, the maximum wire cross-section which can be used for the connector blocks (for current inputs and signals) is of 6mm² by using non -insulated annular terminals. When only pre- insulated terminals can be used, the maximum wire cross-section is reduced to 2, 63 mm² per annular terminal. If a more significant wire cross-section is necessary, two wires can be put in parallel, each one finished by a separate annular terminal.

All the terminal blocks used for connections, except of the port RS485, must be able to withstand a nominal voltage of minimum 300V peak value.

We recommend to protect the auxiliary source connection by using a fuse of type NIT or TIA with a breaking capacity of 16A. For security reasons, do never install fuses in current transformers circuits. The other circuits must be protected by fuses.

6.2 Communication port RS485

Connections to RS485 is made using annular terminals. It is recommended that a two core screened cable, is used with a maximum total length of 1000 m or a200nF total cable capacitance.

Typical specification:

- Each core : 16/0.2 mm copper conductor, PVC insulated.
- Nominal conductor area : 0.5 mm² per core
- Screen : Overall braid, PVC sheathed
- Linear capacitance between conductor and earth : 100pF/m

6.3 Earthing

Each equipment must be connected to a local earth terminal by the intermediary of a M4 earth terminals. We recommend a wire of minimal section of 2,5 mm², with annular terminals on the side of the equipment. Because of the limitations of the annular terminals, the possible maximum section is of 6mm² by wire. If a larger section is necessary, one can use cables connected in parallel, each one ending with an annular terminal separated on the side of the equipment. One can also use a metal bar.

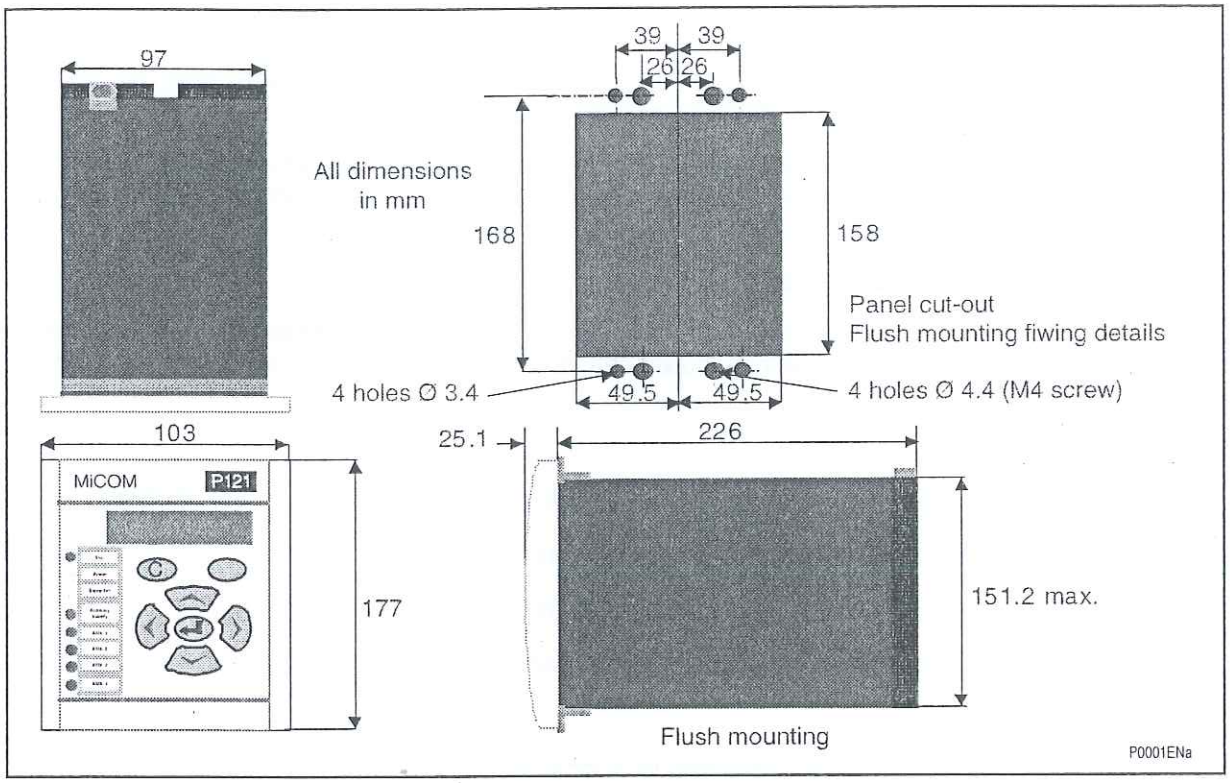
NOTE: To prevent any electrolytic risk between copper conductor or brass conductor and the back plate of the equipment, it is necessary to take precautions to isolate them one from the other. This can be done in several ways, for example by inserting between the conductor and the case a plated nickel or insulated ring washer or by using a tin terminals.

7. CASE DIMENSIONS

MiCOM P120, P121, P122 and **P123** relays are available in a 4U metal case for panel or flush mounting.

Weight : 1.7 to 2.1 Kg

External size :	Height	case	152 mm
		front panel	177 mm
	Width	case	97 mm
		front panel	103 mm
	Depth	case	226 mm
		front panel + case	252 mm



MiCOM P120, P121, P122 AND P123 RELAYS CASE DIMENSIONS

NOTE : For flush mounting, use the screws supplied by AREVA T&D with head diameter smaller than the hole of the front face, otherwise the active part will not be plugged properly (do not add washers).