

SAFETY SECTION

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1. INTRODUCTION

This guide and the relevant operating or service manual documentation for the equipment provide full information on safe handling, commissioning and testing of this equipment and also includes descriptions of equipment label markings.

Documentation for equipment ordered from AREVA Energy Automation & Information is despatched separately from manufactured goods and may not be received at the same time. Therefore this guide is provided to ensure that printed information normally present on equipment is fully understood by the recipient.



Before carrying out any work on the equipment the user should be familiar with the contents of this Safety Guide.

Reference should be made to the external connection diagram before the equipment is installed, commissioned or serviced.

Language specific, self-adhesive User Interface labels are provided in a bag for some equipment.

2. HEALTH AND SAFETY

The information in the Safety Section of the equipment documentation is intended to ensure that equipment is properly installed and handled in order to maintain it in a safe condition.

It is assumed that everyone who will be associated with the equipment will be familiar with the contents of that Safety Section, or this Safety Guide.

When electrical equipment is in operation, dangerous voltages will be present in certain parts of the equipment. Failure to observe warning notices, incorrect use, or improper use may endanger personnel and equipment and cause personal injury or physical damage.

Before working in the terminal strip area, the equipment must be isolated.

Proper and safe operation of the equipment depends on appropriate shipping and handling, proper storage, installation and commissioning, and on careful operation, maintenance and servicing. For this reason only qualified personnel may work on or operate the equipment.

Qualified personnel are individuals who





- are familiar with the installation, commissioning, and operation of the equipment and of the system to which it is being connected;
- are able to safely perform switching operations in accordance with accepted safety engineering practices and are authorised to energize and de-energize equipment and to isolate, ground, and label it;
- are trained in the care and use of safety apparatus in accordance with safety engineering practices;
- are trained in emergency procedures (first aid).

The operating manual for the equipment gives instructions for its installation, commissioning, and operation. However, the manual cannot cover all conceivable circumstances or include detailed information on all topics. In the event of questions or specific problems, do not take any action without proper authorization. Contact the appropriate AREVA technical sales office and request the necessary information.

3. SYMBOLS AND EXTERNAL LABELS ON THE EQUIPMENT

For safety reasons the following symbols and external labels, which may be used on the equipment or referred to in the equipment documentation, should be understood before the equipment is installed or commissioned.

3.1 Symbols

	
Caution: refer to equipment documentation	Caution: risk of electric shock
	
Protective Conductor (*Earth) terminal.	
	
Functional/Protective Conductor Earth terminal	
Note – This symbol may also be used for a Protective Conductor (Earth) terminal if that terminal is part of a terminal block or sub-assembly e.g. power supply.	

*NOTE: THE TERM EARTH USED THROUGHOUT THIS GUIDE IS THE DIRECT EQUIVALENT OF THE NORTH AMERICAN TERM GROUND.

3.2 Labels

See "Safety Guide" (SFTY/4L M) for equipment labelling information.

4. INSTALLING, COMMISSIONING AND SERVICING



Equipment connections

Personnel undertaking installation, commissioning or servicing work for this equipment should be aware of the correct working procedures to ensure safety.

The equipment documentation should be consulted before installing, commissioning or servicing the equipment.

Terminals exposed during installation, commissioning and maintenance may present a hazardous voltage unless the equipment is electrically isolated.

Any disassembly of the equipment may expose parts at hazardous voltage, also electronic parts may be damaged if suitable electrostatic voltage discharge (ESD) precautions are not taken.

If there is unlocked access to the rear of the equipment, care should be taken by all personnel to avoid electric shock or energy hazards.

Voltage and current connections should be made using insulated crimp terminations to ensure that terminal block insulation requirements are maintained for safety.

To ensure that wires are correctly terminated the correct crimp terminal and tool for the wire size should be used.

The equipment must be connected in accordance with the appropriate connection diagram.

Protection Class I Equipment

- Before energising the equipment it must be earthed using the protective conductor terminal, if provided, or the appropriate termination of the supply plug in the case of plug connected equipment.
- The protective conductor (earth) connection must not be removed since the protection against electric shock provided by the equipment would be lost.

The recommended minimum protective conductor (earth) wire size is 2.5 mm² (3.3 mm² for North America) unless otherwise stated in the technical data section of the equipment documentation, or otherwise required by local or country wiring regulations.

The protective conductor (earth) connection must be low-inductance and as short as possible.

All connections to the equipment must have a defined potential. Connections that are pre-wired, but not used, should preferably be grounded when binary inputs and output relays are isolated. When binary inputs and output relays are connected to common potential, the pre-wired but unused connections should be connected to the common potential of the grouped connections.

Before energising the equipment, the following should be checked:

- Voltage rating/polarity (rating label/equipment documentation);
- CT circuit rating (rating label) and integrity of connections;
- Protective fuse rating;
- Integrity of the protective conductor (earth) connection (where applicable);
- Voltage and current rating of external wiring, applicable to the application.

**Equipment Use**

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

**Removal of the equipment front panel/cover**

Removal of the equipment front panel/cover may expose hazardous live parts which must not be touched until the electrical power is removed.

**UL and CSA Listed or Recognized Equipment**

To maintain UL and CSA approvals the equipment should be installed using UL and/or CSA Listed or Recognized parts of the following type: connection cables, protective fuses/fuseholders or circuit breakers, insulation crimp terminals, and replacement internal battery, as specified in the equipment documentation.

**Equipment operating conditions**

The equipment should be operated within the specified electrical and environmental limits.

**Current transformer circuits**

Do not open the secondary circuit of a live CT since the high voltage produced may be lethal to personnel and could damage insulation.

Generally, for safety, the secondary of the line CT must be shorted before opening any connections to it.

For most equipment with ring-terminal connections, the threaded terminal block for current transformer termination has automatic CT shorting on removal of the module. Therefore external shorting of the CTs may not be required, the equipment documentation should be checked to see if this applies.

For equipment with pin-terminal connections, the threaded terminal block for current transformer termination does NOT have automatic CT shorting on removal of the module.

**External resistors, including voltage dependent resistors (VDRs)**

Where external resistors, including voltage dependent resistors (VDRs), are fitted to the equipment, these may present a risk of electric shock or burns, if touched.

**Battery replacement**

Where internal batteries are fitted they should be replaced with the recommended type and be installed with the correct polarity to avoid possible damage to the equipment, buildings and persons.

**Insulation and dielectric strength testing**

Insulation testing may leave capacitors charged up to a hazardous voltage. At the end of each part of the test, the voltage should be gradually reduced to zero, to discharge capacitors, before the test leads are disconnected.

**Insertion of modules and pcb cards**

Modules and pcb cards must not be inserted into or withdrawn from the equipment whilst it is energised, since this may result in damage.

**Insertion and withdrawal of extender cards**

Extender cards are available for some equipment. If an extender card is used, this should not be inserted or withdrawn from the equipment whilst it is energised. This is to avoid possible shock or damage hazards. Hazardous live voltages may be accessible on the extender card.

**Insertion and withdrawal of integral heavy current test plugs**

It is possible to use an integral heavy current test plug with some equipment. CT shorting links must be in place before insertion or removal of heavy current test plugs, to avoid potentially lethal voltages.

**External test blocks and test plugs**

Great care should be taken when using external test blocks and test plugs such as the MMLG, MMLB and MiCOM P990 types, hazardous voltages may be accessible when using these. *CT shorting links must be in place before the insertion or removal of MMLB test plugs, to avoid potentially lethal voltages.

*Note – when a MiCOM P992 Test Plug is inserted into the MiCOM P991 Test Block, the secondaries of the line CTs are automatically shorted, making them safe.

**Fibre optic communication**

Where fibre optic communication devices are fitted, these should not be viewed directly. Optical power meters should be used to determine the operation or signal level of the device.

**Cleaning**

The equipment may be cleaned using a lint free cloth dampened with clean water, when no connections are energised. Contact fingers of test plugs are normally protected by petroleum jelly which should not be removed.

5. DECOMMISSIONING AND DISPOSAL



Decommissioning:

The supply input (auxiliary) for the equipment may include capacitors across the supply or to earth. To avoid electric shock or energy hazards, after completely isolating the supplies to the equipment (both poles of any dc supply), the capacitors should be safely discharged via the external terminals prior to decommissioning.



Disposal:

It is recommended that incineration and disposal to water courses is avoided. The equipment should be disposed of in a safe manner. Any equipment containing batteries should have them removed before disposal, taking precautions to avoid short circuits. Particular regulations within the country of operation, may apply to the disposal of batteries.

6. EQUIPMENT WHICH INCLUDES ELECTROMECHANICAL ELEMENTS



Electrical adjustments

It is possible to change current or voltage settings on some equipment by direct physical adjustment e.g. adjustment of a plug-bridge setting. The electrical power should be removed before making any change, to avoid the risk of electric shock.



Exposure of live parts

Removal of the cover may expose hazardous live parts such as relay contacts, these should not be touched before removing the electrical power.

7. TECHNICAL SPECIFICATIONS FOR SAFETY

7.1 Protective fuse rating

The recommended maximum rating of the external protective fuse for equipments is 16A, high rupture capacity (HRC) Red Spot type NiT, or TIA, or equivalent, unless otherwise stated in the technical data section of the equipment documentation. The protective fuse should be located as close to the unit as possible.



DANGER - CTs must NOT be fused since open circuiting them may produce lethal hazardous voltages.

7.2 Protective Class

IEC 61010-1: 2001
EN 61010-1: 2001

Class I (unless otherwise specified in the equipment documentation). This equipment requires a protective conductor (earth) connection to ensure user safety.

7.3 Installation Category

IEC 61010-1: 2001
EN 61010-1: 2001

Installation Category III (Overvoltage Category III):
Distribution level, fixed installation.

Equipment in this category is qualification tested at 5kV peak, 1.2/50µs, 500Ω, 0.5J, between all supply circuits and earth and also between independent circuits

7.4 Environment

The equipment is intended for indoor installation and use only. If it is required for use in an outdoor environment then it must be mounted in a specific cabinet or housing which will enable it to meet the requirements of IEC 60529 with the classification of degree of protection IP54 (dust and splashing water protected).

Pollution Degree – Pollution
Degree 2
Altitude – operation up to
2000 m
IEC 61010-1: 2001
EN 61010-1: 2001

Compliance is demonstrated by reference to safety standards.

8. CE MARKING



Marking

Compliance with all relevant European Community directives:

Product safety:
Low Voltage Directive - 73/23/EEC
amended by 93/68/EEC
EN 61010-1: 2001
EN 60950-1: 2001
EN 60255-5: 2001
IEC 60664-1: 2001

Compliance demonstrated by reference to safety standards.

Electromagnetic Compatibility Directive
(EMC) 89/336/EEC amended by
93/68/EEC.

Compliance demonstrated via the Technical Construction File route.

The following Product Specific Standard
was used to establish conformity:

EN 50263 : 2000

Where applicable :



ATEX Potentially Explosive
Atmospheres directive
94/9/EC, for equipment.

The equipment is compliant with Article 1(2) of European directive 94/9/EC. It is approved for operation outside an ATEX hazardous area. It is however approved for connection to Increased Safety, "Ex e", motors with rated ATEX protection, Equipment Category 2, to ensure their safe operation in gas Zones 1 and 2 hazardous areas.

CAUTION – Equipment with this marking is not itself suitable for operation within a potentially explosive atmosphere.

Compliance demonstrated by Notified Body certificates of compliance.

Radio and
Telecommunications Terminal
Equipment (R & TTE)
directive 95/5/EC.

Compliance demonstrated by compliance to the Low Voltage Directive, 73/23/EEC amended by 93/68/EEC, down to zero volts, by reference to safety standards.

9. RECOGNIZED AND LISTED MARKS FOR NORTH AMERICA

CSA - Canadian Standards Association

UL - Underwriters Laboratory of America



– UL Recognized to UL (USA) requirements



– UL Recognized to UL (USA) and CSA (Canada) requirements



– UL Listed to UL (USA) requirements



– UL Listed to UL (USA) and CSA (Canada) requirements



– Certified to CSA (Canada) requirements

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