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TECHNICAL SPECIFICATION ADDENDUM

DOCUMENT TITLE	Ancillary Light Current Equipment.
DOCUMENT NUMBER	TS 2.19
ISSUE NUMBER	3
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This Technical Specification shall be read in conjunction with the following amendments:

Check appropriate boxes below

Addition	X	Replacement		Deletion	
AMENDMENTS ADDENDUM 1 WITHDRAWN AND IS REPLACED BY THIS ADDENDUM. Insert Section A of the following in Part 1.14 of TS 2.19 after the first paragraph and before the last paragraph. Insert Section B of the following at the end of paragraph 6 of Part 1.4 of TS 2.19 which ends with 'secured against vibration'					
Section A Test Blocks must be provided on the Protection Equipment panels to enable access into the CT, VT and DC circuits of the protection relays for commissioning and periodic testing of the relay equipment without disturbing any wiring connections associated with the protection scheme. Test Plugs for use with the Test Blocks, must have all circuits (14 circuits) brought out to twenty eight 4mm sockets on the front of the plug, with no shorting devices between the sockets or plugs, allowing full access to the CT, VT and Protection relay circuits for injection or measurement purposes. The Test Plugs must be compatible with Test Blocks (MMLG 01 or equivalent) used on pre NICAP Protection panels. The Test Blocks must be 19" rack compatible, and shall comply with the following IEC specifications:- High Voltage withstand. Insulation. BS EN 60255-5:2001. – 5kVrms for 1 minute between all case terminals connected together and the case earth terminal 5kV rms for 1 minute between any contact pair and either adjacent alternate contact pair provided the intermediate contact pair is not used. 2kV rms for 1 minute between any contact pair and either adjacent contact pair. Current Withstand. – All contact circuits rated at 20A continuously or 400A for 1s, ac or dc.					

Atmospheric environment.

Temperature.

BS EN 60255-1: 2010 – Storage and transit -25°C to +70°C.

Operating -25°C to +70°C.

BS EN 60068-2-1:2007. – Cold.

BS EN 60068-2-2:2007. – Dry Heat.

Humidity.

BS EN60068-2-78:2002. – 56 days at 93% RH and +40°C.

Enclosure Protection.

BS EN 60529:1992. – IP50 (dust protected).

Mechanical environment.

BS EN 60255-21-1: 1996. – Response Class 2

Section B

Where Test Blocks are fitted they should be mounted in such a way that when the Test Plug is inserted it will not foul any other equipment when the relay panel door that they are mounted on, is not in the normal closed position.

Date Effective From

	Originated by	Authorised by	Approved by
Name	S. Pomeroy		
Job Title	Asset Policy Engineer	Asset Policy Manager	ENI Manager
Department	Asset Policy	ENI	ENI
Date			

ANCILLARY LIGHT CURRENT EQUIPMENT

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PURPOSE AND SCOPE

Informative: Throughout this document reference is made to National Grid Specifications. For the avoidance of doubt all references to within this document to Technical Specifications (TS) can be taken to mean either National Grid Technical Specification (NGTS) or Technical Specification (TS) as appropriate.

This Specification defines the requirements for ancillary light current equipment at National Grid owned substations. This Specification is part of a hierarchical structure of documentation comprising three levels of Functional Specification. This Document is a Level two Specification.

This specification describes the overall functional and performance requirements for all ancillary light current equipment for use in substations, including equipment used in conjunction with protection, control, monitoring and metering systems and ancillary equipment associated with primary plant. It covers the requirements for:

- Light current equipment, auxiliary switches and indicators
- Cubicles, boxes and kiosks
- Marshalling
- Earthing of light current equipment
- Marking and labelling
- Components and accessories
- Interposing relays
- Testing facilities

Additional requirements may also apply depending on the light current system application and reference should be made to the appropriate Level 2 or Level 3 Technical Specification.

PART 1 – PROCEDURAL

1 GENERAL REQUIREMENTS

Ancillary light current equipment in substations shall conform to the relevant International or British Standards for its application, be fit for purpose and comply with the requirements of the appropriate Level 2 or Level 3 TS.

The constructional requirements and tests for controlgear assemblies shall comply with BS EN 60439-1.

Electrical installations shall comply with the appropriate requirements of BS 7671.

The use of auxiliary energising voltages above 110 V (ac) shall be avoided, the preferred voltage for such ac circuits is 110 V, the use of centre tap earthed 110 V is preferred. Supplies for test purposes above 110 V (ac) shall be labelled as such. Heating and lighting circuits in cubicles and kiosks shall comply with the requirements of BS 7671. Electrical hazard labels shall be fitted to all plug and sockets connected to systems with nominal voltages above 125 V(ac) or(dc). The labels shall be in accordance with BS 5499-5.

For the requirements of 400 V three phase LVAC power supply systems refer to TS 3.12.3. Wiring for three phase power supplies shall be segregated from other wiring.

All equipment shall be marked to identify the Manufacturer and the Manufacturer's reference.

Equipment that consists of elements that can be withdrawn shall have marking on all the fixed and removable portions, to assist in the correct replacement of equipment.

Covers shall be easily removed and replaced without risk of damage to, or inadvertent operation of, equipment. They shall be constructed and fastened so that they cannot be replaced incorrectly, or damaged or distorted by their fastenings.

Where plug in links are employed the installation shall be such that it is impossible to insert the link incorrectly. For example, it may be necessary to use different horizontal and vertical link spacing to avoid a possible cross connection.

All materials shall be non-ignitable or resistant to flame propagation (tested in accordance with BS EN 60695-2-13 or BS EN 60695-9-1).

All materials shall be dimensionally stable i.e. they shall be distortion-free to the extent necessary for the correct functioning of the equipment in service.

Protective finishes shall be of such a standard that they shall not require renewal during the life of the equipment in the specified ambient conditions.

All contacts and mechanisms shall be protected from dust.

Equipment shall be designed such that all maintenance operations may be carried out safely, in an unencumbered manner and in compliance with the statutory requirements quoted in TS 1

Equipment that has to be removed from a panel or cubicle for maintenance purposes shall be readily removable without disturbing other equipment or wiring.

1.1 Power Supply Isolation

Where fuses, links and their holders are used for power supply isolation they shall comply with the requirements of BS EN 60269 - 1.

Where Miniature Circuit-Breakers (MCBs) are used for power supply isolation purposes they shall meet the requirements of IEC 60947-2 and shall either be removable or facilities shall be provided such that they can be locked in the open position. MCBs shall have an auxiliary contact such that their operation may be alarmed.

The rating of the fuse or MCB shall be clearly identified.

1.2 Switchgear Auxiliary Switches

Auxiliary switches in HV switchgear shall comply with the requirements of BS EN 60694 and the relevant level 2 or 3 Technical Specification.

1.3 Indicators

Indicators of plant state must be clearly visible from all points of operation.

1.4 Indoor Equipment Cubicles

Cubicles shall normally be manufactured, equipped, wired and tested in the manufacturers or contractors works before delivery to site. All equipment, terminals and wiring shall be readily accessible. All trunking provided within the cubicle(s) shall be capable of accommodating all cables and wiring for the complete site installation. On the completed installation all cable identification, ferruling and labelling shall be clearly visible and legible to personnel requiring access to the cubicle for maintenance or testing/commissioning purposes.

Cabling from external plant and equipment shall be terminated on one side of the terminal blocks within the cubicle only. Inter cubicle or bus wiring shall also be located on separate terminal rails within the cubicle.

Where a cubicle is to house differing systems within the same panel the following conditions apply:

- a) Equipment within the cubicle must be segregated and clearly labelled on both the front and rear of the cubicle.
- b) All equipment within a system must be grouped together. For the avoidance of doubt system in this context includes fuses, links and MCBs.
- c) Different systems shall where practicable use separate terminal rails.
- d) All terminal blocks shall be clearly labelled.
- e) All tripping racks shall be mounted as separate systems and shall not be incorporated into other protection systems, excepting a trip relay that is part of a function based system. The tripping racks shall include all necessary trip relays, trip circuit supervision relays, fuses, links and MCBs.

Cubicles shall comply with the dimensions stated in IEC 60297 Part 2. The cubicle shall be rigid, free standing and capable of being fixed down. All equipment cubicles shall have 19" rack mounting arrangements.