

**Guidance Note OUES/BS/E/GN008 Rev01**  
**18<sup>th</sup> Edition – Non Standard sockets / RCD protection.**



Written by: R Gregg – Principal Electrical Engineer.  
Approved: S.Pearson – Head of Building Services  
Date: 28/03/2019

This document has been generated to ensure consistency of RCD protection on University of Oxford plant and equipment following the release of the 18<sup>th</sup> Edition wiring regulations.

The 18<sup>th</sup> Edition states: -

**411.3.3 Additional requirements for socket-outlets and for the supply of mobile equipment for use outdoors**

*In AC systems, additional protection by means of an RCD with a rated residual operating current not exceeding 30 mA shall be provided for:*

- (i) socket-outlets with a rated current not exceeding 32A, and*
- (ii) mobile equipment with a rated current not exceeding 32A for use outdoors.*

*An exception to (i) is permitted where, other than for an installation in a dwelling, a documented risk assessment determines that RCD protection is not necessary.*

*The requirements of Regulation 411.3.3 do not apply to FELV systems according to Regulation 411.7 or reduced low voltage systems according to Regulation 411.8.*

**NOTE 1:** *See also Regulations 314.1(iv) and 531.3.2 concerning the avoidance of unwanted tripping.*

**NOTE 2:** *See Appendix 2, item 11 in respect of risk assessment.*

**NOTE 3:** *A lighting distribution unit complying with BS 5733, luminaire track system, installation coupler, LSC or DCL is not regarded as a socket-outlet for the purposes of this regulation.*

**411.3.4 Additional requirements for circuits with luminaires**

*Within domestic (household) premises, additional protection by an RCD with a rated residual operating current not exceeding 30 mA shall be provided for AC final circuits supplying luminaires.*

**314.1 Division of Installation**

*Every installation shall be divided into circuits, as necessary, to:*

- (i) avoid danger and minimize inconvenience in the event of a fault*
- (ii) facilitate safe inspection, testing and maintenance (see also Chapter 46 and Section 537)*
- (iii) take account of hazards that may arise from the failure of a single circuit such as a lighting circuit*
- (iv) reduce the possibility of unwanted tripping of RCDs due to excessive protective conductor (PE) currents not due to a fault*
- (v) mitigate the effects of electromagnetic disturbances (see also Chapter 44)*
- (vi) prevent the indirect energizing of a circuit intended to be isolated.*

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### **531.3.2 Unwanted tripping**

*Residual current protective devices shall be selected and erected such as to limit the risk of unwanted tripping. The following shall be considered:*

- (i) *subdivision of circuits with individual associated RCDs. RCDs shall be selected and the circuits subdivided in such a way that any earth leakage current likely to occur during normal operation of the connected load will not cause unwanted tripping of the device. See also Section 314*
- (ii) *in order to avoid unwanted tripping by protective conductor currents and/or earth leakage currents, the accumulation of such currents downstream of the RCD shall be not more than 30 % of the rated residual operating current*  
**NOTE 1:** *This will also allow a better selection of the type of RCDs according to the nature of the circuit or the load.*  
**NOTE 2:** *RCDs may operate at any value of residual current in excess of 50 % of the rated residual current. (iii) use of short time-delayed RCDs, provided the applicable requirements of Chapter 41 are met*  
**NOTE 3:** *In the case of transient effects, tripping of the RCD may occur by charging of bypass capacitors or by other electromagnetic disturbances.*
- (iii) *coordination of general type RCDs, selective type RCDs and time-delayed RCDs (CBRs according to BS EN 60947-2) as covered in Section 536*  
**NOTE 4:** *CBR is a circuit-breaker incorporating residual current protection.*
- (iv) *coordination of RCDs with surge protective devices (SPD) according to Regulation 534.4.7.*

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**University final power circuits.**

In regard to regulation 531.3.2 (ii) the maximum amount of 13A twin sockets on circuit is **8 double sockets**. Permission to exceed this must be agreed in writing by the OUES Electrical Engineer.

Below is a list of common installations around the University and will guide the contractor for the appropriate installation. Any Non RCD protected socket will require a documented risk assessment. It is the Departments and contractors responsibility to fill out the risk assessment and submit it to the Estates Electrical Engineer for approval. A template of the risk assessment is attached at the back of this document.

<b>Equipment Type.</b>	<b>Installation method.</b>
Air Conditioning Split DX units.	Local Isolator.
Mechanical Control Panels	Local Isolator.
Internal Mechanical Plant	Non RCD protected Plug and socket – Documented Risk Assessment required.
External Mechanical Plant	Local Isolator
Fan Coil units	RCD Socket required.
Water Heaters	RCD Fuse spur required.
Security Equipment / CCTV etc..	RCD Socket required.
Disabled Access Equipment	RCD Socket required.
Stair Lifts	RCD Socket required.
Freezers	Non RCD protected Plug and socket – Documented Risk Assessment required.
Fire Alarm Panel & Equipment.	Lockable isolator (such as MK K5880WHI) and Fusespur on all other FA equipment.
Door Holder open devices	RCD Socket required.
Data Cabinets / Frodo units	Non RCD protected Plug and socket – Documented Risk Assessment required.
Fume Cupboards supplies.	Non RCD protected Plug and socket – Documented Risk Assessment required.

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**Risk Assessment for Non Protected RCD Socket.**

DOCUMENT REFERENCE NO – OUES/RA/E025

<b>Building Name</b>	
<b>Building Number</b>	
<b>DB reference</b>	
<b>Circuit Ref</b>	
<b>Equipment to be plug into the socket</b>	
<b>Can a non-standard socket be used?</b>	
<b>Environmental conditions</b>	
<b>Reason for Non RCD Protection.</b>	

**ESTATES INFORMATION.**

**THIS DOCUMENT ONCE COMPLETED SHALL BE SAVED TO THE O DRIVE - EXAMPLE BELOW.**

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Written By: \_\_\_\_\_ DATE \_\_\_\_\_

Reviewed By: \_\_\_\_\_ DATE \_\_\_\_\_