



Buildings & Estate Services

Electrical Services Design Briefing Note

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Electrical Design work for University of Exeter Buildings & Estate Division.

Design Briefing Note

1. General

The overall design objective shall be to produce a building which will provide high quality useable space which will rank alongside the best equivalent university buildings in terms of sustainability and energy efficiency. For new builds, a BREEAM Very Good rating shall be achieved.

Discuss and agreed the basic design parameters with the University Electrical Engineer (UEE) or his delegated representative at the commencement of design.

Stay in contact during the design period to facilitate a design that meets the requirements of all parties.

Note: The University requires all electrical designs to be internally checked, reviewed and approved by the consultant or designers organisation quality assurance system before submission to the University for Comment and approval.

Readable design drawings and symbols legends, detailed design specification, calculations, risk assessments, document registers and manufacturers data where appropriate (i.e. main distribution board layout) shall be presented to the UEE for approval **two clear working weeks** before going to tender. The UEE shall be given adequate time prior to tender to consider and return comments on the design.

2. Energy Metering

Metering is to be provided for electricity, gas and water supplies to each building, heat meters are to be provided for each building on multi building heating systems. Meters are to be located where they can be read easily.

Gas, heat and water meters are to have pulse outputs and to be connected to Multilog Enercom data loggers with PLT-22 mains borne signalling. Where not already available, a data network interface and intranet socket shall be installed to transmit data from local LV network to Energy Management PC. Receipt of correctly scaled data in the form of CSV files shall be demonstrated.

Gas, water and electricity sub meters shall be installed to serve any commercial outlets such as catering, shops, laundry facilities etc. sub metering shall be installed in accordance with part L the building regulations

Electricity metering each building electrical intake as follows:

- Use Northern Designs Multicube model 6, installed into main switch board.
- Size DIN 96 x 96,
- Specify all Parameter.
- Specify internal Modbus RS485 Communications and software
- Supply and install a twin outlet RJ45 data socket and connect to the nearest University intranet hub. Liaise with University to identify location of hub. Final patching in will be done by the University to allow data to be transmitted via the University Data Network to a nominated PC at Streatham Farm.
- Specify Northern Design Cube. IP (Modbus – TCP/IP) conversion Bridge Module with a unique Serial Number and MAC Address Number Label. Instruct the contractor to supply this to the University IT dept. for them to issue an IP Address.
- Install twin 13 Amp twin switched socket outlet adjacent to the Cube.IP unit preferably supplied by a dedicated radial circuit from a local distribution board.

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- Connect Cube.IP unit to local electrical meters via modbus comms loop.
 - Connect Cube.IP unit via RJ45 socket to allow data to be transmitted via the university data network to a nominated PC at Streatham Farm.
 - Liaise with the UEE to ensure that the Cube.IP unit and meters are set up to communicate correctly with a nominated University PC.

Electricity sub-metering shall be installed that enable at least 90% of estimated annual electricity energy consumption to be assigned to the various end-use categories (lighting, small power, mechanical heating and vent etc).

Sub meters shall be installed to meet the current building regulation requirement's typically including:

- Each commercial outlet.
- Large individual Loads such as mechanical panels, refrigeration plant etc.
- Each final distribution board with a load over 25kW
- The lighting circuits on each distribution board*

* Via CT's contained in an adaptable box bolted to the distribution board

Sub-meters shall be specified as:

- Northern Designs MultiCube Model 3
- Size DIN 96 x 96
- With Internal Modbus RS485/422 communications.

All Sub meters shall be connected to the building intake meter via the Modbus communications loop.

All electrical metering shall be installed so that all CT and pulse output connections remain accessible without the need to isolate power supplies. Provision shall be made to short out CT's prior to disconnection from the meter in the event that the meter needs to be removed.

Receipt of correctly scaled data at the nominated PC in the form of CSV files shall be demonstrated for each of the meters.

Incoming supplies continued.

Add an hours-run counter to generator incomers.