



ESTATES SUPPORT SERVICE

Project Briefing Document

Section 9 – Metering guide and specifications

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1. METERING GUIDE AND SPECIFICATION

Newcastle University uses METERology to monitor all energy meters. The following specification is adapted from METERology and should be followed to ensure all sub meters can be accessed and monitored.

1.1 INSTALLATION

1.1.1 CT Selection and Installation

All Current Transformers (CT's) should be sized appropriately for the anticipated load being measured.

Where CT's are not installed in "safely" accessible compartments CT sizing should be recorded on the external of the panel.

All CT's should be installed with P1 to the supply side and P2 to the load side on the supply being monitored.

Wiring from the CT to the meter should be installed using 1.0mm², 6 core, YY control cable, with numbered cores. The allocation of core numbers should be as follows;

Core	Designation
1	L1/S1
2	L1/S2
3	L2/S1
4	L2/S2
5	L3/S1
6	L3/S2

Where practical and appropriate CT's should be wired to shorting/disconnect terminals of Weidmuller WTR4 type (or equivalent).

Wiring from the CT shorting terminals to the meter can either be the same YY control cable or an appropriately coloured single core 1.0mm² instrument cable (brown, black, grey or blue cable should not be used for CT wiring).

Where YY cable is not used an appropriate cable marker should be used to identify both ends of each control cable being used for CT wiring.

1.1.2 Voltage Reference Cabling

All voltage reference cabling should use 1.5mm² coloured coded power cable. This can either be single core or multi-core cable. Where this cable involves exposed cable runs it should be installed with an appropriate level of mechanical protection, either ducting, conduit or trunking. Alternatively a PVC/SWA/PVC wire armoured cable may be used.

Where multiple meters are installed a common voltage reference is permissible, provided that this accurately reflects the voltage of the supply being metered.

Each meter should be installed with its own local fuse and neutral grouping, allowing isolation of an individual meter. This fuse and neutral grouping should be mechanically linked so that all phases and the neutral are operated together.

1.1.3 Cable Terminations

All stranded cable should be fitted with an appropriately sized bootlace ferrule before being terminated. No exposed conductor should be left protruding from any termination.

1.2 ENERGY METER SELECTION

If the space or part of the space is to be used by a third party, or an invoice will be raised on the energy use of the space a MID approved meter must be installed.

1.2.1 Pulse Meters

METERology supports the connection of pulse output meters through an eDAM 9050 pulse counting digital input module. Up to 12 pulse output meters, of mixed type, may be connected to each eDAM module.

1.2.2 Discrete Modbus Meters

Meters must be equal or approved to the following Modbus enabled power/energy meters (via Modbus Gateway);

- Socomec COUNTIS E33 (100A direct connection, DIN rail mount)
- Socomec COUNTIS E34 (100A direct connection, DIN rail mount – MID Approved)
- Socomec COUNTIS E43 (5A CT connection, DIN rail mount)
- Socomec COUNTIS E44 (5A CT connection, DIN rail mount – MID approved)
- Socomec COUNTIS E53 (5A CT connection, panel mount)
- Socomec COUNTIS E63 (3 x 100A direct connection, DIN rail mount)
- Socomec DIRIS A10 with JBUS/MODBUS communication via RS485 (5A CT connection, DIN rail mount)
- Socomec DIRIS A20 with RS485 JBUS/MODBUS communication module (5A CT connection, panel mount)
- Socomec DIRIS A40 with JBUS/Modbus communication module (5A CT connection, panel mount)
- Socomec DIRIS A40 with Ethernet communication module (5A CT's, panel mount) ^E
- Socomec DIRIS A40 with Ethernet communication + RS485 gateway JBUS/MODBUS module (5A CT connection, panel mount) ^E
- Schneider Power Logic PM9C (5A CT connection, DIN rail mount)

- Schneider Power Logic PM700 Series with RS485 communications (5A CT connection, panel mount)
- Schneider Power Logic PM800 Series with RS485 communications (5A CT connection, panel mount)
- Schneider Power Logic PM5000 Series with RS485 communications (5A CT connection, panel mount)
- IME Nemo 72L with RS485 communications (1 A or 5A CT connection, panel mount)
- Northern Design Cube 400 IP (5A CT connection , panel mount)
- Northern Design Rail 350 (5A Ct connection, DIN rail mount)

^E External Modbus Gateway not required

If you have a preferred Modbus enabled energy meter that is not on this list please contact METERology as there is every chance that this will be acceptable subject to a minor enhancement to the METERology MeteringService software.

1.2.3 Modular Modbus Meters

Meters must be equal or approved to the following modular Modbus enabled power/energy metering systems (via Modbus Gateway);

- Socomec DIGIWARE range (various gateway options)
- Northern Design Multicube (integrated gateway required)

1.3 ENERGY METER COMMUNICATION

1.3.1 Modbus Gateways

Modbus gateways must be equal or approved to the following;

- VLinX MESR 900 series Modbus Ethernet to Serial Gateways
- Socomec Ethernet/RS232-RS485 interface
- Schneider EGX300 Ethernet Gateway

1.3.2 Modbus Cabling

Cabling must be equal or approved to the following RS485 data cabling using the following Belden cable specs;

- Belden 9841
- Belden 9842
- Belden 1120A
- Belden 9860

1.3.3 M-Bus Meters

M-Bus meters must be equal or approved to the following M-Bus enabled power/energy meters (via M-Bus Gateway);

- Kamstrup Multical

If you have a preferred M-Bus enabled energy meter that is not on this list, please contact METERology as there is every chance that this will be acceptable subject to a minor enhancement to the METERology MBusService software.

1.3.4 M-Bus Gateway Modules

M-Bus Gateways must be equal or approved to;

- PiiGAB M-Bus 810

1.3.5 Wireless M-Bus Meters

Wireless M-Bus enabled power/energy meters (via Wireless M-Bus Gateway) must be equal or approved to;

- Sontex Superstatic 749

If you have a preferred M-Bus enabled energy meter that is not on this list, please contact METERology as there is every chance that this will be acceptable subject to a minor enhancement to the METERology MBusService software.

1.3.6 Wireless M-Bus Gateway Modules

Wireless M-Bus Gateways must be equal or approved to;

- Adeunis WMBUS USB Dongle AMR
- Adeunis WMBUS Receiver AMR Battery
- Adeunis WMBUS Receiver AMR

1.3.7 BACnet Controllers

No additional hardware is required to communicate with BACnet controllers beyond existing IT connections.

Further Information

For further information please contact;

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t. 0141 354 1608

m. 07789 277682

w. www.meterology.co.uk

1.4 WATER METER COMMUNICATION

Newcastle University use Demeter Water Solutions as our water meter data collector. All meters water meters installed must be pulse enabled with a pulse cable installed. The meter install should be coordinated with Demeter so that the logging device and meter can be installed at the same time.

Further Information

For further information please contact;

Andy Smedley, Owner/Director Demeter Limited

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t. 01740 625220

m. 07810 547090

w. <http://www.checkyourwater.co.uk>

2. FURTHER GUIDANCE

2.1 HEAT METERS

For projects that involve the provision of heating, cooling or hot water to a third party or final customer, **the legal requirements of the latest version of the Heat Network (Metering and Billing) Regulations must be met.**

Guidance on the regulations can be found here: <https://www.gov.uk/guidance/heat-networks>.

The main duties of the University as the 'Heat Supplier' are as below, and those person(s) working on behalf of the University must ensure these adhered to:

Duty to install meters

Where heating, cooling or hot water is supplied from a district heat network to a building occupied by more than one final customer, the heat supplier must ensure that meters are installed to measure that heating, cooling or hot water to that building.

Such a meter must be situated at a heat exchanger in that building or at the point of entry of the district heat network pipes into the building.

Where only one final customer occupies a building supplied by a district heat network, the heat supplier must ensure that meters are installed to measure the consumption of heating, cooling or hot water by that final customer.

Where there is more than one final customer in a building supplied by a district heat network or by communal heating, the heat supplier must ensure that meters are installed to measure the consumption of heating, cooling or hot water by each final customer.

Duty to install heat cost allocators, thermostatic radiator valves and hot water meters

Generally, this is applicable in the case of individual flats within student residences where final customers are to pay for their own heat outside of a typical service charge agreement or rental payment.

A heat supplier must ensure that the following are installed:

- heat cost allocators and thermostatic radiator valves at each room heating radiator in order to determine and enable the control of the consumption of heating by each final customer;
- a hot water meter.

Only Ultrasonic flow meters may be fitted and no other type (turbine, magnetic, swing-jet etc.) are permitted. Heat meters must be fitted in line with the manufacturer's requirements. Best practice heat meter installation space requirements are outlined below; these do not replace requirements set out in the manufacturer's requirements, which should be followed as closely as possible:

Pipe Diameter	Total length of straight pipework required in return pipe (mm)	Total length of straight pipework required in flow pipe (mm)
15	300	175
22	440	175
28	560	175
35	700	175
42	840	175

2.2 ELECTRICITY: FISCAL SUPPLIES

General Checklist for applying for a new connection or increased supply

1	Inform Distribution Network Operator (DNO) - Northern Power Grid should be contacted to request new or increased supply. Determine maximum electricity load (Capacity) (kVA) the site will need.
2	Design of the new connection – the electrical engineer and DNO work together to design the system and provide a quote for the works. Once quote has been accepted the work can commence.
3	MPAN – DNO will provide a unique 13 digit reference number for the new electrical supply point. Once the MPAN is received the electricity supplier and Meter Operator (MOP) can be chosen. <u>You must</u> consult the Energy Manager to ensure that these are added to the current

	supplier and MOP contracts. Usually a minimum of 20 working days' notice is required prior to the preferred meter installation date
4	Site testing – <u>Before the meter installation</u> a qualified electrician must test all electrical equipment in the premises to certify that all the internal electrical circuits and equipment meet the current wiring regulations. A copy of the test certificate <u>must be</u> left on site at the meter point visible for the Meter Operator (MOP) engineer.

2.3 GAS: FISCAL SUPPLIES

General Checklist for applying for a new connection or increased supply

1	Inform National Grid – Contact National Grid contacted to request connection or alteration. Determine size of supply the site will need.
2	Accept the quote and pay – National Grid will provide a quote for the works, once this is paid an appropriate time for a site survey will need to be agreed.
3	Agree start date – during the survey the date for the works to start should be agreed, the surveyor will call prior to the start date to ensure everything is ready for work to commence.
4	MPR – Once work is complete, Nation Grid will provide a unique reference number for the new gas supply point. Once the MPR is received the gas supplier and Meter Asset Manager can be chosen. <u>You must consult</u> the Energy Manager to ensure that these are added to the current supplier and MAM contracts. Usually a minimum of 20 working days' notice is required prior to the preferred meter installation date. The MAM will provide the option for an AMR device to be fitted as part of the install, no deviation from the requirement is permitted without approval from the Energy Manager.

2.4 WATER: FISCAL SUPPLIES

General Checklist for applying for a new connection or increased supply

1	Request Application for a New Water Supply – This is available on Northumbrian Water website https://www.nwl.co.uk/developers/application-forms-guidance.aspx .
2	Complete Application – Complete and return to newdevelopmentwater@nwl.co.uk with application fee.
3	Arrange supply pipe and trench inspection – NWL will issue a quotation and instructions on how to arrange supply pipe and trench inspection within 28 days of receipt of the quotation.
4	Make payment – If you wish to proceed make payment for the connection
5	Request Site Visit - request a site visit by a Distribution Technician.
6	When connecting to existing main - Following a successful supply pipe/trench inspection NWL aim to make connection(s) within 21 calendar days. When connecting to newly laid main – NWL will aim to make connection to the main when they carry out supply pipe and trench inspection providing private pipework complies fully with the water regulations requirements. The full length of the excavated trench must be left open.
7	Contact Demeter – See section 1.4 Water Meter Communication of this document. Single Property Connections - The water meter will be fitted when the connection is made to the mains.

Multiple Connections (>1 supply in the same trench) – The water meter will only be fitted if the supplies can be confirmed at the time of connection. Where supplies cannot be confirmed a trickle flow cap will be installed. Once the property has been connected onto NWL network with all internal plumbing complete you will need to make a request for the meters to be installed.