Qualification Guide

BPEC 600/1890/2 - Level 2 Diploma in Smart Metering (Power)

BPEC 600/1889/6 - Level 2 Diploma in Smart Metering (Gas)

BPEC 600/1888/4 - Level 2 Diploma in Smart Metering (Dual Fuel)

SMART METERING QUALIFICATIONS

Introduction

This Guide has been produced in conjunction with Energy and Utility Skills who have developed the 'National Occupational Standards' for the smart metering qualifications. This guide details the requirements for centres delivering the smart metering qualifications learners undertaking the qualifications and aims to provide:

- An overview of the structure of the smart metering qualifications
- An overview of the assessment strategy for the smart metering qualifications
- Guidance notes for assessors and other centre staff for the smart metering qualifications

The smart metering qualifications are work-based qualifications designed for individuals carrying out the installation, exchange or removal of domestic smart meters. There are three smart metering qualifications:

- Level 2 Diploma in Smart Metering (Power)
- Level 2 Diploma in Smart Metering (Gas)*
- Level 2 Diploma in Smart Metering (Dual Fuel)*

*Successful completion of these qualifications will demonstrate gas safety competence relating to the installation, exchange and removal of domestic gas meters. This will enable operatives who hold one of these qualifications to apply to become a member of Gas Safe Register.

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Rules of Combination

Diploma in Smart Metering (Power)

This is a QCF Level 2 qualification of 37 credits and 112 guided learning hours consisting of 7 mandatory units. ALL units must be achieved to achieve the overall qualification.

Successful completion of this qualification proves that learners are competent to install, exchange and remove a single phase smart meter and associated equipment. The qualification and unit details are shown below:

Optional units are available where additional skills and knowledge are required to cover Multi-Phase electricity supplies.

Qualification Title	QCF Level 2 Diploma in Smart Metering (Power)		
Qualification Number	600/1890/2	BPEC Number	SM-001
Last Registration Date	31/07/2014		
Last Certification Date	31/07/2016		

QCF Unit Ref	Unit Title	Level	Credit Value	Notional Learning Time	Guided Learning Hours
A/502/9855	Working safely in the energy and utilities sector	2	4	40	27
L/502/9858	Working practices in the energy and utilities sector	2	2	20	13
J/503/0233	Using and communicating technical information in the energy and utilities sector	2	3	30	17
F/502/9856	Delivering customer service when working within the energy and utilities sector	2	2	20	13
A/503/0231	Install and commission communication systems for smart meters	2	4	40	18
M/600/3988	Install single phase meter and associated equipment (new connection)	2	11	110	8
A/600/3993	Change single phase meter and associated equipment	2	11	110	16
	Totals		37	370	112

Optional Power Units	Unit Title	Level	Credit Value	Notional Learning Time	Guided Learning Hours
J/600/4001	Install multi-phase meter whole current new connection	2	15	45	45
F/600/4000	Change multi-phase meter whole current	2	15	45	45
M/600/4008	Install single phase meter and associated equipment on multi-phase cut-out new connection	2	10	30	30
T/600/4009	Change single phase meter and associated equipment on multi-phase cut-outs	2	10	30	30
	Totals		50	150	150

Diploma in Smart Metering (Gas)

This is a QCF Level 2 qualification of 41 credits and 262 total guided learning hours consisting of 8 mandatory units. ALL units must be achieved to attain the overall qualification and there are no compensations.

Successful completion of this qualification demonstrates that learners are competent to install, exchange and remove a gas smart meter (up to 6.0m^3/hr). The qualification and unit details are shown below:

Optional units are available where additional skills and knowledge are required to cover medium pressure gas installations.

Qualification Title	QCF Level 2 Diploma in Smart Metering (Gas)		
Qualification Number	600/1889/6	BPEC Number	SM-002
Last Registration Date	31/01/2015		
Last Certification Date	31/01/2017		

QCF Unit Ref	Unit Title	Level	Credit Value	Notional Learning Time	Guided Learning Hours
A/502/9855	Working Safely in the Energy and Utilities sector	2	4	40	27
L/502/9858	Working Practices in the Energy and Utilities sector	2	2	20	13
J/503/0233	Using and Communicating Technical Information in the Energy and Utilities sector	2	3	30	17
F/502/9856	Delivering Customer Service When Working Within the Energy and Utilities sector	2	2	20	13
A/503/0231	Install and Commission Communication Systems for Smart Meters	2	4	40	18
K/503/0256	Applied Practices and Principles for Installing Low Pressure Natural Gas Smart Meters up to U6 only	2	20	200	150
F/503/0232	Prepare, Install and Commission Low Pressure Natural Gas Smart Meter and Regulator up to 6.0m^3/hr	2	3	30	8
J/502/9857	Low Pressure Gas Smart Meter Tightness Testing and Direct Purging	2	3	30	16
	Totals		41	410	262

Optional Gas Units	Unit Title	Level	Credit Value	Notional Learning Time	Guided Learning Hours
F/505/0884	Prepare, Install and Commission medium Pressure Natural Gas Smart Meter and Regulator up to 6.0m3/hr	2	9	48	48
	Totals		9	48	48

Diploma in Smart Metering (Dual Fuel)

This is a QCF Level 2 qualification of 63 credits and 322 guided learning hours consisting of 10 mandatory units. ALL units must be achieved to achieve the overall qualification and there are no compensations.

Successful completion of this qualification demonstrates that learners are competent to install, exchange and remove a gas smart meter (up to 6.0m^3/hr) and a single phase smart meter and associated equipment. The qualification and unit details are shown below:

Optional units are available where additional skills and knowledge are required to cover Multi-Phase electricity supplies and medium pressure gas installations.

Qualification Title	QCF Level 2 Diploma in Smart Metering (Dual Fuel)				
Qualification Number	600/1888/4	BPEC Number	SM-003		
Last Registration Date	31/07/2014				
Last Certification Date	31/07/2016				
QCF and SCQF Unit Ref	**Unit Title**	**Level**	**Credit Value**	**Notional Learning Time**	**Guided Learning Hours**
A/502/9855	Working Safely in the Energy and Utilities sector	2	4	40	27
L/502/9858	Working Practices in the Energy and Utilities sector	2	2	20	13
J/503/0233	Using and Communicating Technical Information in the Energy and Utilities sector	2	3	30	17
F/502/9856	Delivering Customer Service When Working Within the Energy and Utilities sector	2	2	20	13
A/503/0231	Install and Commission Communication Systems for Smart Meters	2	4	40	18
K/503/0256	Applied Practices and Principles for Installing Low Pressure Natural Gas Smart Meters up to U6 only	2	20	200	150
F/503/0232	Prepare, Install and Commission Low Pressure Natural Gas Smart Meter and Regulator up to 6.0m^3/hr	2	3	30	8
J/502/9857	Low Pressure Gas Smart Meter Tightness Testing and Direct Purging	2	3	30	16
M/600/3988	Install Single Phase Meter and Associated Equipment (New Connection)	2	11	110	30
A/600/3993	Change Single Phase Meter and Associated Equipment	2	11	110	30
	Totals		63	630	322

Optional Power Units	Unit Title	Level	Credit Value	Notional Learning Time	Guided Learning Hours
J/600/4001	Install multi-phase meter whole current new connection	2	15	45	45
F/600/4000	Change multi-phase meter whole current	2	15	45	45
M/600/4008	Install single phase meter and associated equipment on multi-phase cut-out new connection	2	10	30	30
T/600/4009	Change single phase meter and associated equipment on multi-phase cut-outs	2	10	30	30
	Totals		50	150	150

Optional Gas Unit	Unit Title	Level	Credit Value	Notional Learning Time	Guided Learning Hours
F/505/0884	Prepare, Install and Commission medium Pressure Natural Gas Smart Meter and Regulator up to 6.0m3/hr	2	9	48	48
	Totals		9	48	48

Note:

Notional Learning Time (NLT) is the average time for a learner to achieve the learning outcomes and assessment criteria. An initial assessment of a learner's ability to achieve the qualification should be carried out to estimate the learning time. It can be assumed that a learner with no previous experience in the work activity will require between 20 – 25% additional learning time to complete the qualification, whereas an experienced learner may require some 20 – 25% less learning time.

Guided Learning Hours (GLH) is the estimated number of hours of teacher supervised or directed study time required to teach the qualification and each unit.

Unit Details

The next pages detail the 15 individual Smart Metering Units:

A/502/9855 - Working safely in the Energy and Utilities sector

This unit is designed to provide either new entrants or those operatives already working in the Energy and Utilities sector the opportunity to gain competence in:

- Knowing the hazards and risks in the Energy and Utilities sector
- Working to required safety signs and legislation in the Energy and Utilities sector
- Selecting, using and storing personal protective equipment (PPE) relevant to the activity being carried out in the Energy and Utilities sector
- Taking action in the event of accidents and emergencies in the Energy and Utilities sector
- Maintaining a safe working environment in the Energy and Utilities sector
- Manually handling tools, equipment and materials safely in the Energy and Utilities sector

Learning Outcome 1
Know hazards and risks in the Energy and Utilities sector
Assessment Criteria
1.1 Identify hazards and risks in the Energy and Utilities sector 1.2 Describe appropriate action to mitigate identified hazards and risks

Learning Outcome 2
Be able to work to required safety signs and legislation in the Energy and Utilities sector
Assessment Criteria
2.1 Work safely in accordance with normative industry standards and legislation. All of the following must be covered: a. environment b. use of tools and equipment c. materials and substances d. sector working practices 2.2 Identify and work safely in accordance with statutory and advisory safety signs and labels

Learning Outcome 3
Be able to select, use and store personal protective equipment (PPE) relevant to the activity being carried out in the Energy and Utilities sector
Assessment Criteria
3.1 Select appropriate PPE for the activity being carried out in the Energy and Utilities sector 3.2 Carry out pre-use checks on PPE according to company requirements 3.3 Use PPE in accordance with legislative requirements 3.4 Store PPE appropriately

Learning Outcome 4
Be able to take action in the event of accidents and emergencies in the Energy and Utilities sector
Assessment Criteria
4.1 Respond to accidents and emergency situation: a. injury to self b. injury to others 4.2 Report accidents, injuries, hazardous or dangerous occurrences to the correct person in line with legislative requirements

Learning Outcome 5
Be able to maintain a safe working environment in the Energy and Utilities sector
Assessment Criteria
5.1 Establish and maintain entry and exit routes to working locations 5.2 Store tools, equipment and materials safely

Learning Outcome 5 Continued
Be able to maintain a safe working environment in the Energy and Utilities sector
Assessment Criteria
5.3 Use tools, equipment and materials safely and for the purpose intended. All of the following must be included: a. tools b. equipment c. materials
5.4 Dispose of hazardous substances and waste materials in accordance with legislative requirements

Learning Outcome 6
Be able to manual handle tools, equipment and materials safely
Assessment Criteria
6.1 Demonstrate safe and correct lifting and carrying technique when carrying out lifting of load

L/502/9858 - Working practices in the Energy and Utilities

This unit is designed to provide either new entrants or those operatives already working in the Energy and Utilities sector the opportunity to gain competence in:

- Planning and preparing to complete activities in the Energy and Utilities sector
- Maintaining working practices whilst completing activities in the Energy and Utilities sector
- Identifying, responding to and resolving problems and areas for improvement in own area of responsibility
- Creating and maintaining effective working relationships in the Energy and Utilities sector
- Contributing to own personal learning and development needs in the Energy and Utilities sector

Learning Outcome 1
Be able to plan and prepare to complete activities in the Energy and Utilities sector
Assessment Criteria
1.1 Select appropriate tools, equipment, materials and PPE for the allocated activity 1.2 Prepare the working area 1.3 Obtain authorisation to carry out the work from the responsible person

Learning Outcome 2
Maintain working practices whilst completing activities in the Energy and Utilities sector
Assessment Criteria
2.1 Adhere to all working practices and normative standards whilst completing activities in the Energy and Utilities sector

Learning Outcome 3
Be able to identify, respond to and resolve problems and areas for improvement in own area of responsibility
Assessment Criteria
3.1 Identify problems and areas for improvement in own area of responsibility relating to 2 of the following within the Energy and Utilities sector: a. materials b. tools c. equipment d. information sources e. people f. safety procedures g. workmanship h. time i. weather 3.2 Respond appropriately to problems and areas for improvement within the Energy and Utilities sector 3.3 Resolve problems and areas for improvement within the Energy and Utilities sector 3.4 Resolve issues and problems to complete the activity

Learning Outcome 4
Be able to create and maintain effective working relationships in the Energy and Utilities sector
Assessment Criteria
4.1 Dress appropriately for the working activity 4.2 Communicate effectively with internal and external customers and members of the public 4.3 Return information sources to designated personnel on completion of activities 4.4 Return resources to designated locations on completion of activities

Learning Outcome 5	
Be able to contribute to own personal learning and development needs in the Energy and Utilities sector	
Assessment Criteria	
5.1	Identify personal learning and development needs in relation to work activity and discuss with designated personnel
5.2	Agree an appropriate action plan to address personal learning and development needs with designated personnel
5.3	Review and revise personal development records

J/503/0233 - Using and communicating technical information in the Energy and Utilities sector

This unit is designed to provide either new entrants or those already working within the Energy and Utilities sector the opportunity to gain competence in:

- Knowing relevant information sources for the Energy and Utilities sector
- Interpreting and using technical information in the Energy and Utilities sector
- Recording and communicating technical information in the Energy and Utilities sector

Learning Outcome 1	
Know relevant information sources for the Energy and Utilities sector	
Assessment Criteria	
1.1	Identify relevant technical information sources appropriate for the activity to include 3 from the following: a. job instructions b. test schedules c. company information d. material specifications e. reference table and chart f. planning documentation g. operating sheets h. process specification i. risk assessment j. method statements
1.2	Identify relevant diagrammatic and pictorial information sources appropriate for the activity to include 2 of the following: a. detailed component drawings b. general assembly drawings c. repair drawings d. wiring/circuit diagrams e. installation drawings f. approved sketches g. illustrations h. visual display screens i. modification drawings j. fabrication drawings k. operational diagrams l. physical layouts m. manufacturers manuals and drawings n. photographic representations

Learning Outcome 2	
Be able to obtain, interpret and use technical information in the Energy and Utilities sector	
Assessment Criteria	
2.1	Obtain appropriate technical information from the information source to carry out activities in the Energy and Utilities sector
2.2	Interpret technical information to carry out the allocated activity. 4 of the following must be achieved: a. de-commissioning procedure b. installation procedure c. commissioning procedure d. test results procedure e. handover procedure
2.3	Report any inconsistencies or inaccuracies in information sources to appropriate person(s)

Learning Outcome 3	
Be able to record and communicate technical information in the Energy and Utilities sector	
Assessment Criteria	
3.1	Produce technical information to record completed activities
3.2	Correctly complete technical information to record completed activities
3.3	Communicate technical information to the appropriate personnel

F/502/9856 - Delivering customer service when working within the Energy and Utilities sector

This unit is designed to provide either new entrants or those operatives already working within the Energy and Utilities sector the opportunity gain competence in:

- Preparing for a work activity in a customer's premises in the Energy and Utilities sector
- Establishing and maintaining working relations with customers in the Energy and Utilities sector

Learning Outcome 1
Be able to prepare for a work activity in a customers premises in the Energy and Utilities sector
Assessment Criteria
1.1 Determine the purpose for visiting the customer from information given 1.2 Identify the location of the customers premises 1.3 Prepare relevant information and documentation prior to visiting the customer. Evidence to include 3 of the following: a. personal company identification b. plans c. work instructions d. company information e. customer or client information

Learning Outcome 2
Be able to establish and maintain working relations with customers in the Energy and Utilities sector
Assessment Criteria
2.1 Introduce and identify self to customers in line with company requirements 2.2 Explain to the customer the purpose of the visit 2.3 Listen to the customer and respond appropriately to customer requirements 2.4 Agree work-plan with the customer, providing all relevant information 2.5 Record relevant information from the work activity 2.6 Respond appropriately to customer concerns and issues in line with company procedures. Evidence to include 2 of the following: a. resolve customer issues on site within own level of responsibility b. resolve customer issues on site when outside own area of responsibility by referring to an appropriate person c. report issues which cannot be resolved on site d. provide the customer with contact details of other personnel if requested

A/503/0231 - Install and commission communication systems and media for smart meters

This unit is designed to provide either new entrants or those operatives already working within the energy and utilities sector the opportunity to gain competence in:

- Knowing the principles of communication technologies used in smart metering
- Planning the location for the smart metering communication system
- Installing communication system for smart meters
- Commissioning, testing and completing communication installation for smart meters
- Identifying and rectifying faults in smart meter communication systems

Learning Outcome 1	
Know the principals of communication technologies used in smart metering	
Assessment Criteria	
1.1	Describe how communication systems for smart metering work
1.2	Describe the benefits of communication technologies used in smart metering for: a. Customers b. Energy Suppliers
1.3	Explain the different types of in house display equipment
1.4	Describe the implications of installing one type over another
1.5	Explain how to achieve inoperability

Learning Outcome 2	
Be able to plan the location for smart metering communication systems	
Assessment Criteria	
2.1	Explain how to assess the installation location for safely and correct operations of the communication system
2.2	Carry out a risk assessment of proposed locations and record observations using approved documentation
2.3	Identify a suitable location for the planned communication system installation for the customer
2.4	Carry out relevant checks to ensure that equipment and components provided are correct for the planned installation

Learning Outcome 3	
Be able to install communication system for smart meters	
Assessment Criteria	
3.1	Select and use the designated tools and installation components
3.2	Prepare the location to accommodate the installation using information from installation plans, manufacturer's manuals and the site specific risk assessment
3.3	Assemble equipment and components to manufacturer's specification
3.4	Install communication system as required by the plan
3.5	Install in home display/software equipment as required by the plan
3.6	Connect the installation to services as required by the plan
3.7	Leave the installation site in a safe, clean and secure condition upon completion
3.8	Record installation information accurately using relevant documentation and procedures
3.9	Inform the customer if the installation cannot be completed and what actions are required for successful completion

Learning Outcome 4
Be able to commission, test and complete communication installation for smart meters
Assessment Criteria
4.1 Activate the communication system and medium 4.2 Check that the installation functions according to specification 4.3 Test the communication reception system for transmitting and receiving data 4.4 Complete final checks on the communication system in accordance with specifications 4.5 Confirm all communication systems work in accordance with manufacturer's and employers requirements 4.6 Inform the customer when the installation is complete or if there are any problems with the installation and advise when work will be completed 4.7 Demonstrate to the customer how the installation works; provide them with any relevant user operating instructions to include at least 2 of the following: a. operation of IHU b. access to supplier web based energy information c. appending credit and accessing relevant energy usage information d. pairing smart meter with compatible appliances e. operation of export tariffs 4.8 Complete all relevant installation documentation

Learning Outcome 5
Be able to identify and rectify faults in smart meter communication systems
Assessment Criteria
5.1 Use relevant diagnostic procedures to determine the causes of system faults in line with manufacturer's guidelines 5.2 Report system faults in equipment and components that cannot be rectified on site to the responsible person/s 5.3 Explain guidelines on replacing defective components where applicable 5.4 Rectify system faults, replacing defective components 5.5 Complete appropriate documentation and report findings in line with industry procedures

K/503/0256 - Applied practices and principles for installing low pressure natural gas smart meters up to U6 only

This unit is to provide either new entrants or those operatives already working within the gas industry the opportunity to gain competence in:

- Knowing the dangers associated with electricity when preparing to install low pressure natural gas smart meters
- Using scientific principles in gas utilisation for natural gas smart metering
- Using gas pressure regulators
- Combustion and the effects of its products
- Building materials and methods used in the installation of natural smart gas meters
- Gas safety regulations, legislation and standards in natural gas smart metering

Learning Outcome 1
Understand the dangers associated with electricity, when preparing to install low pressure natural gas smart meters
Assessment Criteria
1.1 Evaluate the potential risk of electrical shock resulting from the existing electrical installation and faulty electrical tools and equipment. All of the following must be covered: a. common electrical dangers on construction sites, in business and private properties b. signs of damaged or worn electrical cables, power tools and property hard wired systems c. signs of visual faults in electrical components d. trailing cables e. proximity of cables to any service pipework and meter installation f. buried and hidden cables g. inadequate over current protection device h. avoidance of cables under wooden floors
1.2 Explain different types of earthing used in properties including main and supplementary protective bonding. All of the following must be covered: a. requirements and procedures for use of temporary continuity bonding b. earthing methods and sizing c. main equipotential bonding d. supplementary bonding e. temporary bonding f. electrical earth bonding labels

Learning Outcome 2
Be able to use scientific principles in gas utilisation for natural gas smart metering
Assessment Criteria
2.1 Select the appropriate scientific System International (SI) units for areas, volume and pressure 2.2 Identify the types of gas meters currently used in the gas industry and the gas rate for each of them

Learning Outcome 3
Understand how to use gas pressure regulators
Assessment Criteria
3.1 Identify the correct operating pressures for low pressure in the natural gas network 3.2 Outline the network pressure tiers 3.3 Explain the need for and use of pressure regulators including factors affecting pressure loss 3.4 Explain how to correctly use pressure gauges to include digital and water

Learning Outcome 4
Know about combustion and effects of its products
Assessment Criteria
4.1 Evaluate the characteristics of: a. complete and incomplete combustion including air and fuel requirements b. pre and post aerated flames the effects of CO on building occupa 4.2 Identify visually, burner faults resulting in incomplete combustion including: a. flame lift b. lighting back

Learning Outcome 5
Understand building materials and methods used in the installation of natural gas smart meters
Assessment Criteria
5.1 Explain how to identify corrosion in metals and protection methods. All of the following must be covered: a. properties of metals b. corrosion c. protection from corrosion including protective and decorative finishes d. construction materials including plastics, timber, bricks, concrete, cement and plaster 5.2 Explain how to identify correct and incorrect service entries into buildings. Both of the following must be covered: a. damp proof course b. other services entering properties 5.3 Explain how to identify suitable and unsuitable routes within buildings for the installation of gas pipework and fittings. All of the following must be covered: a. types of pipe materials and fittings suitable for carrying gas b. jointing of materials and fittings including copper capillary, compression, push-fit joints, press fit joints. Steel threaded and union joints c. suitable pipe supports and fixings including methods used for a variety of walls, brick, concrete, thermalite block, studded, dry lined and timber framed d. location of pipes, route and appearance e. pipework in walls, voids, ducts/shafts and under floors f. exterior pipework g. interrelation with other services h. corrosion protection i. gas pipe identification j. disconnection of pipes and fittings including, use of temporary continuity bond 5.4 Summarise the need for ventilation for gas fuelled appliances, ventilation paths and their effect upon sizes

Learning Outcome 5 Continued

Understand building materials and methods used in the installation of natural gas smart meters

Assessment Criteria

5.5 Calculate ventilation requirements for all types of gas fuelled appliances. All of the following must be covered in the calculations:

a. ventilation openings and grilles
b. adventitious ventilation
c. location of vents
d. installation of vents through walls
e. ventilation paths to compartments including ducts
f. ventilation requirements for open-flue appliances
g. ventilation requirements for flueless appliances
h. ventilation requirements for appliances in compartments
i. compartment ventilation labels
j. effects of extractor fans
k. ventilation for vertex flues
l. passive stack ventilation

5.6 Explain how to identify correct and incorrect ventilators and installations

5.7 Describe the different types of open flued and room sealed chimney systems. All of the following types of chimney system must be covered:

a. natural
b. fan draught
c. rigid chimney types: brick/masonry, single and double wall, metallic and non-metallic
d. flexible metallic liners
e. shared (common) chimney systems
f. SE & U Ducts

5.8 Summarise and clarify the suitability and characteristics of chimney construction materials:

a. metallic (single/double wall)
b. non metallic
c. brick/masonry chimneys
d. chimney blocks
e. flexible metallic liners
f. gas flue boxes

5.9 Identify correct and incorrect chimney outlet positions for open flue chimneys and room sealed appliances. Both of the following must be covered:

a. pitched and flat roofs
b. proximity to windows, doors, carports

5.10 Explain the different flue and chimney systems and how they operate. All of the following must be covered:

a. parts of an open flue chimney
b. open flue chimney system operation
c. chimney system design
d. temperature effects
e. condensation problems
f. flue terminal design
g. open flue, natural draught chimney outlet locations/positions before 2001
h. general operations of room sealed chimney including: parts and operation of a room sealed appliance flue (natural draught and fan draught), room sealed appliance flue, flue terminal design
i. room sealed chimney materials including metallic and plastic
j. room sealed chimney outlet positions including terminal positions, neighbouring properties, carports or extensions, condensing appliances, basements, light wells and retaining walls, terminal guards requirements

Learning Outcome 5 Continued
Understand building materials and methods used in the installation of natural gas smart meters
Assessment Criteria
5.11 Explain the need to test an open chimney and room sealed appliances and who would carry out the test. To include all of the following: a. visual checks b. factors that affect performance including down draught and wind effects c. effects of passive stack ventilation d. effects of fans e. flue flow test and spillage f. testing fanned draught open flue systems g. checking case seals and case integrity h. checking/testing positive pressure case appliances

Learning Outcome 6
Understand gas safety regulations, legislation and standards in natural gas smart metering
Assessment Criteria
6.1 Explain the scope and purpose of regulations, legislation and standards relating to work activities covering: a. Gas Safety (Installation and Use) Regulations b. RIDDOR c. Gas Safety (Management) Regulations
6.2 Explain the unsafe situations procedure and how the information at each level is passed on to the customer
6.3 Identify visually, unsafe situations in appliances, meters and installation pipework

F/503/0232 - Prepare, install and commission low pressure natural gas smart meter and regulator up to 6.0m³/hr

This unit is designed to provide those new entrants or already working within the gas industry the opportunity to gain competence in:

- Planning and preparing work activities to install natural gas smart meters (up to 6m³/hr) on low pressure gas systems.
- Preparing resources to install natural gas smart meters (up to 6m³/hr) on low pressure gas systems.
- De-commissioning natural gas smart meters and regulators (up to 6m³/hr) on low pressure gas services.
- Installing natural gas smart meters (up to 6m³/hr) on low pressure gas services.
- Commissioning natural gas smart meters (up to 6m³/hr) on low pressure gas services

Learning Outcome 1	
Be able to plan and prepare work activities to install natural gas smart meter (up to 6m³/hr) on low pressure gas service	
Assessment Criteria	
1.1	Identify and agree the work location using available information
1.2	Check the work site for damage or defects
1.3	Record and report any damage or defects if found to the correct people
1.4	Inform all affected parties of their intended work plan, in line with industry standards
1.5	Demonstrate how to test for the presence of voltage at the meter installation using an approved voltage sensing device
1.6	Confirm the siting of the emergency control valve is accessible, correctly labelled and operating correctly, reporting any defects to the network owner for rectification
1.7	Conduct a site specific risk assessment, completing required documentation in line with health and safety regulations and industry standards
1.8	Select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety requirements
1.9	Explain what to look for when carrying out a visual inspection of tools and equipment
1.10	Plan the work to be undertaken to comply with industry standards and manufacturer's guidelines taking into account risk assessment, location, ventilation
1.11	Explain the appropriate industry standards and procedures that directly impact on the work to be undertaken
1.12	Describe the appropriate regulations relating to safe access and working at heights
1.13	Select the appropriate tools and equipment required to work at heights and confined spaces

Learning Outcome 2	
Be able to prepare resources to install natural gas smart meter (up to 6m³/hr) on low pressure gas service	
Assessment Criteria	
2.1	Select and prepare tools and equipment compatible with the work plan, risk assessment and industry standards
2.2	Report any defects and/or shortages
2.3	Apply correct control measures to ensure the work site is in a safe and suitable condition for work and the area is protected from damage being caused throughout the work

Learning Outcome 2 Continued	
Be able to prepare resources to install natural gas smart meter (up to 6m³/hr) on low pressure gas service	
Assessment Criteria	
2.4	Identify and confirm the installation is supplied with low pressure (75mbar or less)
2.5	Confirm and record meter readings
2.6	Confirm the gas load is operating at the maximum capacity of the meter
2.7	Explain the actions to be taken in case of non-compliance of the meter installation
2.8	Identify and confirm suitability of the meter and associated equipment to be installed in line with industry standards and work plan

Learning Outcome 3	
Be able to de-commission natural gas meters and regulators (up to 6m³/hr) on low pressure gas service	
Assessment Criteria	
3.1	Check that conditions within the gas and earthing systems permit safe de-commissioning
3.2	Use the correct tools and equipment for the different de-commissioning activities including use of temporary continuity bonds
3.3	Use designated safe isolation methods, tests and procedures to de-commission meters, regulators, gas installation and components
3.4	Take appropriate precautionary action to ensure that temporarily de-commissioned meters, regulators, gas installation components do not present a safety hazard
3.5	Permanently remove and disconnect meters, regulators, gas systems and components including any equipotential bonding as required ensuring the appropriate labelling, storage and waste management procedures are followed
3.6	Correctly label any live gas pipes following permanent bond or other electrical safety measures in place
3.7	Explain the procedures for temporary and permanent de-commissioning of meters and regulators, including the use of temporary continuity bonds
3.8	Explain the precautions to be taken to ensure they do not prevent safety hazards
3.9	Communicate appropriately with responsible persons in the de-commissioning process

Learning Outcome 4	
Be able to install natural gas smart meter (up to 6m³/hr) on low pressure gas service	
Assessment Criteria	
4.1	Work in accordance with relevant health, safety, environmental and industry standards throughout the installation
4.2	Explain how and where to access information relating to the installation
4.3	Install the identified natural gas smart meter (2.5 to 6.0m³/hr) and associated equipment on low pressure gas service using selected tools and equipment, in line with work plan, risk assessment, manufacturer's specifications and relevant regulations and standards
4.4	Explain the importance of liaising with others whose procedures and routines may be affected by the suspension of the gas supply
4.5	Correctly carry out testing procedures on completed installations in line with industry standards
4.6	Check the completed installation meets and complies with the work plan and equipment specifications
4.7	Check for adequate earthing to the installation
4.8	Explain the actions to be taken if earthing is inadequate

Learning Outcome 4 Continued	
Be able to install natural gas smart meter (up to 6m³/hr) on low pressure gas service	
Assessment Criteria	
4.9	Confirm the integrity of the installation and gas system using tightness and purging procedures (low pressure testing only)
4.10	Complete and attach an emergency notice on at least ONE occasion
4.11	Resolve any problems encountered during the installation safely and efficiently, in line with industry standards, referring matters which cannot be resolved to an appropriate person
4.12	Inform the customer if work not completed and explain the reason(s)
4.13	Complete all relevant documentation/electronic data relating to the installation in line with industry standards
4.14	Store all tools and equipment in line with industry standards and health and safety requirements
4.15	Safely collect and dispose of all waste, including components that may be hazardous to health or the environment in line with industry standards

Learning Outcome 5	
Be able to commission natural gas smart meter (up to 6m³/hr) on low pressure gas service	
Assessment Criteria	
5.1	Confirm that conditions within the gas installation are suitable and will permit safe commissioning
5.2	Select and use appropriate tools and equipment for the commissioning activity
5.3	Confirm the gas operating pressure is correct for the activity and adjust or inform an appropriate person if not able to achieve the correct pressure
5.4	Visually inspect to confirm the operation of the installation conforms to manufacturer's instructions, industry standards and British Standards
5.5	Explain the gas industry unsafe situations procedure including when to isolate unsafe gas appliances, systems and components
5.6	Relight any previously connected appliances to manufacturer's instructions and visually inspect for obvious safety defects
5.7	Explain how to isolate unsafe gas appliances, systems and components and the application of the gas industry unsafe situations procedure
5.7	Instruct the customer on the correct operation of the installation and provide them with a copy of manufacturer's instructions and other relevant documentation

F/505/0884 - Prepare, install and commission medium pressure natural gas smart meter and regulator up to 6.0m³/hr

This unit is designed to provide those new entrants or already working within the gas industry the opportunity to gain competence in:

- Planning and preparing work activities for decommissioning, installing, exchanging and commissioning smart gas meters and regulators (up to 6m³/hr) on medium pressure gas systems.
- Decommission smart gas meters and regulators (up to 6m³/hr) on medium pressure gas systems.
- Install and exchange smart gas meters and regulators (up to 6m³/hr) on medium pressure gas systems.
- Commissioning smart gas meters and regulators (up to 6m³/hr) on medium pressure gas systems.
- Liaise with other persons and resolve problems relating to decommissioning, installing, exchanging and commissioning smart gas meters and regulators (up to 6m³/hr) on medium pressure gas systems.

Learning Outcome 1	
Be able to plan and prepare work activities for decommissioning, installing, exchanging and commissioning smart gas meters and regulators (up to 6m³/hr) on medium pressure gas systems.	
Assessment Criteria	
1.1	Identify and agree the customers job requirements
1.2	Compare the customers job requirements with statutory and national standards identifying any conflicting issues
1.3	Survey the work site for any features that could affect the installation
1.4	Check all required materials, tools and equipment are available, fit for purpose and adequately stored when not in use
1.5	Complete site specific risk assessments in line with health and safety regulations and national standards
1.6	Select, inspect and wear appropriate personal protective equipment (PPE)
1.7	Apply correct measures to protect the work site and the building fabric against possible damage being caused during the job
1.8	Check adequate services are available and the gas supply, existing main equipotential bonding and ventilation meets national standards requirements for meter installation
1.9	Check the siting of the gas meter, regulator, relief vent pipe, meter housing and other associated components meets national standards requirements for location, siting and clearances
1.10	Identify whether the installation is a primary or secondary meter
1.11	Identify whether the upstream supply is low or medium pressure and, if medium pressure, which pressure tier
1.12	Check siting of the emergency control valve (ECV) and meter inlet valve (MIV) is accessible, correctly labelled and operates correctly
1.13	Check existing installation for unsafe situations, and where necessary apply industry unsafe situations procedures correctly
1.14	Test for the presence of voltage at the meter with suitable voltage sensing device
1.15	Explain the actions to be taken where defects or deficiencies are identified during pre-installation surveys

Learning Outcome 2	
Be able to de-commission smart gas meters and regulators (up to 6m³/hr) on medium pressure fed natural gas systems	
Assessment Criteria	
2.1	Check the existing installation permits safe de-commissioning
2.2	Select and use correct tools and equipment for de-commissioning activities
2.3	Carry out tightness testing in accordance with current national standards prior to commencing work
2.4	Use designated safe isolation methods, tests and procedures to de-commission the meter installation
2.5	Take precautionary actions to ensure that temporarily de-commissioned gas meters, regulators, equipotential bonding, gas installations and associated components do not present a safety hazard
2.6	Disconnect and remove gas meters, regulators, relief vent pipes, and other associated components ensuring the installation is safe
2.7	Mark any live gas pipes after permanent removal of a meter, with a notice to indicate the pipe contains gas

Learning Outcome 3	
Be able to install and exchange smart gas meters and regulators (up to 6m³/hr) on medium pressure fed natural gas systems	
Assessment Criteria	
3.1	Carry out planned preparatory work to meet the meter installation and exchange requirements
3.2	Select and use correct tools and equipment for the meter installation and exchange activities
3.3	Check existing installation, new gas meter, regulator, relief vent pipe and other associated components for damage
3.4	Check seals are intact, packaging is removed and gas ways are clear
3.5	Assemble and position the gas meter, regulator, relief vent pie and other associated components and confirm it meets national standards
3.6	Carry out tightness testing and purging procedures in accordance with national standards
3.7	Check for adequate main equipotential bonding to the gas installation
3.8	Explain the actions to be taken if main equipotential bonding is inadequate
3.9	Apply all necessary labels to the meter installation
3.10	Label and disconnect or seal off from the gas supply with an appropriate fitting, gas equipment where they are not to be commissioned immediately
3.11	Explain where non return valves may be used in conjunction with a meter installation

Learning Outcome 4	
Be able to commission smart gas meters and regulators (up to 6m³/hr) on medium pressure fed natural gas systems	
Assessment Criteria	
4.1	Check meter installation has been installed in accordance with national standards
4.2	Select and use correct tools and equipment for the meter installation commissioning activities
4.3	Check the installations operating pressure at the meter and/or regulator outlet is in accordance with national standards

Learning Outcome 4 Continued	
Be able to commission smart gas meters and regulators (up to 6m³/hr) on medium pressure fed natural gas systems	
Assessment Criteria	
4.4	Check the safe operation of all meter and regulator controls including emergency control valve, meter inlet valve, over pressure shut off, under pressure shut off, excess flow valve and other safety devices in accordance with national standards
4.5	Relight any existing appliances
4.6	Instruct the customer in the use of the gas meter, regulator and other associated components, providing them with all instructions
4.7	Complete all necessary documentation including confirming the safe commissioning of the gas meter regulator and other associated components
4.8	Safely handle, collect and dispose of all waste, including components that may be hazardous to health or the environment in line with national standards
4.9	Work in accordance with relevant health, safety, environmental and national standards throughout the entire job

Learning Outcome 5	
Be able to liaise with other persons and resolve problems relating to de-commissioning, istalling, exchanging and commissioning smart gas meters and regulators (up to 6m³/hr) on medium pressure fed natural gas systems	
Assessment Criteria	
5.1	Communicate with customers, line managers or other appropriates persons throughout the job
5.2	Identify any deficiencies, unsafe or 'not to current standards' situations that may exist, and rectify or apply industry unsafe situations procedure
5.3	Identify an unsafe situation and apply industry unsafe situations procedures
5.4	Resolve problems encountered during the job, referring matters that cannot be resolved to appropriate person(s)

J/502/9857 - Low pressure gas smart meter tightness testing and direct purging

This unit is designed to provide either new entrants or those operatives already working in the gas industry installing smart meters the opportunity to gain competence in:

- Planning and preparing work activities for tightness testing and direct purging - low pressure only
- De-commissioning natural gas systems and components to industry standards
- Tightness testing and direct purging low pressure natural gas smart meters

Learning Outcome 1	
Plan and prepare work activities for tightness testing and direct purging – IGE/UP/1B Edition 2 (low pressure only)	
Assessment Criteria	
1.1	Confirm the siting of the gas supply and provision of ventilation meets the industry requirements for tightness testing and direct purging
1.2	Conduct a site specific risk assessment, completing required documentation in line with health and safety regulations and industry standards
1.3	Plan the work to be undertaken to comply with industry standards and manufacturer's guidelines taking into account risk assessment, location, ventilation
1.4	Confirm that the gas supply meets the industry requirements for the installation

Learning Outcome 2	
De-commission gas systems and components to industry standards	
Assessment Criteria	
2.1	Check and confirm that conditions within the gas installation permits safe de-commissioning
2.2	Select and use the correct tools and equipment for de-commissioning activities
2.3	Explain the process to be followed should materials, components, tools and equipment not be available to commence the de-commissioning process
2.4	Use designated safe isolation methods, tests and procedures to de-commission gas installations and components
2.5	Take appropriate precautionary action to ensure that temporarily de-commissioned appliances, gas systems and components do not present a safety hazard
2.6	Take appropriate, safe and correct action to prevent de-commissioned gas systems being brought into operation
2.7	Communicate with others who may be affected by the suspension of the gas supply including other trades and customers

Learning Outcome 3	
Tightness test and direct purge gas smart meter - IGE/UP/1B Edition 2 (low pressure only)	
Assessment Criteria	
3.1	Apply control measures to ensure the work site is in a safe and suitable condition for work and the area is protected from damage being caused during the test in line with a site specific risk assessment
3.2	Apply methods of working which protect the building décor, customer property and existing systems and components
3.3	Carry out a trace and repair to a gas escape and retest
3.4	Isolate unsafe gas appliances, gas systems and components and apply the gas industry unsafe situations procedure

Learning Outcome 3 Continued	
Tightness test and direct purge gas smart meter - IGE/UP/1B Edition 2 (low pressure only)	
Assessment Criteria	
3.5	Carry out low pressure purging procedures to the current standard to confirm the safe supply of gas to the installed gas pipework and appliances
3.6	Resolve any problems as they arise in accordance with approved procedures and refer to an appropriate person when problems cannot be resolved
3.7	Instruct the customer or appropriate person on the correct operation of the meter installation, valves and components providing a copy of any literature
3.8	Complete all records and documentation in line with industry standards following tightness testing and direct purging
3.9	Store all tools and equipment in line with health and safety requirements
3.10	Safely collect and dispose of all waste, including system contents that may be hazardous to health or the environment in line with legislative requirements

M/600/3988 - Install single phase meter and associated equipment (new connection)

This unit is about installing single phase metering and associated equipment in an electrical power engineering environment. It involves completing installation activities in a rigorous and methodical manner and the following of processes and procedures to make sure that the finished work meets the quality assurance and operating specifications set by the organisation. By completing this unit, you show that you are competent in:

- Planning to install single phase metering and associated equipment
- Preparing to install single phase metering and associated equipment
- Installing single phase metering and associated equipment
- Using and communicating data and information
- Resolving problems effectively and efficiently

Learning Outcome 1	
Be able to plan for work activities to install single phase meter and associated equipment in line with company procedures	
Assessment Criteria	
1.1	Identify the correct work location using available information
1.2	Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations
1.3	Plan the work to be undertaken in line with risk assessment, taking into account factors: a. Location b. Content c. sequence of tasks
1.4	Inform all affected parties of their intended work plan

Learning Outcome 2	
Be able to prepare resources to install single phase meter and associated equipment in line with company procedures	
Assessment Criteria	
2.1	Select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
2.2	Apply control measures to ensure the work area is fit for purpose in line with risk assessment which must include: a. Signs and barriers b. Demarcation work area c. Control and removal of hazards d. Contamination protection
2.3	Identify the correct meter and associated equipment to be installed, in line with the work plan
2.4	Select and prepare tools and equipment compatible with the work plan and risk assessment
2.5	Check the tools and equipment are fit for purpose to carry out the identified work
2.6	Confirm meter details and accurately record meter readings
2.7	Report faults with tools, equipment and PPE

Learning Outcome 3
Be able to install single phase meter and associated equipment in line with company procedures
Assessment Criteria
3.1 Install the identified single phase meter and associated equipment using selected tools and equipment, in line with the work plan, risk assessment. The installation must include **1** of the following: a. single phase single rate meter b. Multi rate with communication method c. Two rate – with timeswitch/teleswitch with off peak or no off peak supplies d. Two rate 5 terminal meter e. Multi-rate meter f. Two rate – key/token with or without communication method, with or without off peak supplies
3.2 Install an isolator on at least ONE occasion, in line with work plan
3.3 Perform testing procedures on completed installations
3.4 Check the completed installation meets and complies with the work instructions and equipment specifications
3.5 Demonstrate that problems are resolved safely and efficiently, referring matters which cannot be rectified to the appropriate person
3.6 Work through the duration of the work in accordance with; a. safe working and environmental practices b. company procedures c. health and safety regulations d. environmental legislation
3.7 Complete required post activity documentation
3.8 Demonstrate that tools and equipment are stored
3.9 Demonstrate that waste materials are handled in line with statutory procedures
3.10 Demonstrate that the work area is left in a safe condition

Learning Outcome 4
Understand how to install single phase meter and associated equipment using work specific knowledge
Assessment Criteria
4.1 Describe the main principles of health and safety and environmental legislation and regulations
4.2 Identify company reporting lines, authorisation roles and responsibilities
4.3 Describe the company policies and procedures that directly impact on the work to be undertaken

Learning Outcome 5
Understand how to install a single phase meter and associated equipment using work specific knowledge
Assessment Criteria
5.1 Describe the company procedures and processes for reporting problems with tools and equipment
5.2 Describe the procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3 Describe the processes and procedures for inspecting and preparing tools and equipment prior to use
5.4 Identify the instructions and processes for using tools and equipment safely when undertaking routine checks

Learning Outcome 5 Continued	
Understand how to install a single phase meter and associated equipment using work specific knowledge	
Assessment Criteria	
5.6	Identify what personal protective equipment (PPE) needs to be worn when undertaking work activities
5.7	Describe what materials and substances are dangerous and hazardous to health
5.8	Describe how to maintain safe working and environmental practices
5.9	Describe how to minimise risks to self and others when undertaking work activities
5.10	Identify company work instructions and reporting systems
5.11	Describe the required response to different types and categories of emergency situations that may occur
5.12	Describe how to install plant and apparatus using specified principles, methods, processes and procedures
5.13	Identify and report inaccurate and incorrect work instructions and documentation

A/600/3993 - Change single phase smart meter and associated equipment

This unit is about changing single phase metering and associated equipment in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves the wearing of personal protective equipment whilst carrying out the work. By completing this unit, you show you are competent in:

- Planning for changing single phase metering and associated equipment
- Preparing for changing single phase metering and associated equipment
- Changing single phase metering and associated equipment
- Using and communicating data and information
- Resolving problems effectively and efficiently

Learning Outcome 1	
Be able to plan for work activities to change single phase meter and associated equipment	
Assessment Criteria	
1.1	Identify the correct work location using available information
1.2	Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations
1.3	Plan the work to be undertaken in line with risk assessment, taking into account factors: a. Location b. Content c. sequence of tasks
1.4	Inform all affected parties of their intended work plan, in line with company procedures

Learning Outcome 2	
Prepare resources to change single phase meter and associated equipment	
Assessment Criteria	
2.1	Select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
2.2	Apply control measures to ensure the work area is fit for purpose in line with risk assessment which must include: a. Signs and barriers b. Demarcation work area c. Control and removal of hazards d. Contamination protection
2.3	Identify the correct meter and associated equipment to be worked on, in line with work plan
2.4	Select and prepare tools and equipment compatible with the work plan, risk assessment
2.5	Check tools and equipment are fit for purpose to carry out the identified work
2.6	Check meter details and accurately record meter readings
2.7	Report faults with tools, equipment and PPE

Learning Outcome 3
Be able to change single phase meter and associated equipment in line with company procedures
Assessment Criteria
3.1 Remove the identified single phase meter and associated equipment using selected tools and equipment, in line with the work plan and risk assessment. Removal must include **1** of the following: a. single phase single rate meter b. Multi rate with communication method c. Two rate – with timeswitch/teleswitch with or without off peak supplies d. Two rate - 5 terminal meter e. Multi-rate meter f. Two rate – key/token, with or without communication method, with or without off peak supplies
3.2 Replace removed meters with any **2** of the following: a. Multi rate with communication method b. Mechanical single phase meter c. Electronic single phase meter d. Two rate – with timeswitch/teleswitch with or without off peak supplies e. Multi rate 5 terminal meter f. Check meter g. Multi rate meter h. Two rate – key/token, with or without communication methods, with or without off peak supplies
3.3 Perform testing procedures on completed installations
3.4 Demonstrate that problems are resolved safely and efficiently, referring matters which cannot be rectified to the appropriate person
3.5 Demonstrate that work is in accordance with: a. safe working and environmental practices b. company procedures c. health and safety regulations d. environmental legislation
3.6 Complete required post activity documentation
3.7 Demonstrate that tools and equipment are stored
3.8 Demonstrate that waste materials are handled in line with statutory procedures
3.9 Demonstrate that the work area is left in a safe condition

Learning Outcome 4
Understand how to change a single phase meter and associated equipment using general knowledge
Assessment Criteria
4.1 Describe the main principles of health and safety and environmental legislation and regulations
4.2 Identify company reporting lines and authorisation roles and responsibilities
4.3 Describe the company policies and procedures that directly impact on the work to be undertaken

Learning Outcome 5	
Understand how to change a single phase meter and associated equipment using work specific knowledge	
Assessment Criteria	
5.1	Describe the company procedures and processes for reporting problems with tools and equipment
5.2	Describe the procedures and information sources used to make sure that tools and equipment are fit for purpose
5.3	Describe the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
5.4	Identify the instructions and processes for using tools and equipment safely when undertaking routine checks
5.5	Describe what personal protective equipment needs to be worn when undertaking work activities
5.6	Describe what materials and substances are dangerous and hazardous to health
5.7	Describe how to maintain safe working and environmental practices
5.8	Describe how to minimise risks to self and others when undertaking work activities
5.9	Identify the procedures and documentation used for reporting problems
5.10	Identify company work instruction and reporting systems
5.11	Describe the required response to the different types and categories of emergency situations that may occur
5.12	Describe how to replace plant and apparatus using specified principles, methods, processes and procedures
5.13	Identify and report inaccurate and incorrect work instructions and documentation

J/600/4001 – Install Multi Phase Meter, Whole Current, New Connection

This unit is about changing single phase metering and associated equipment in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves the wearing of personal protective equipment whilst carrying out the work. By completing this unit, you show you are competent in:

- Plan for work activities to install Multi-phase meter (whole current)
- Preparing resources to install Multi-phase meter (whole current)
- Install Multi-phase meter (whole current)
- Know and understand how to install Multi-phase meter (whole current) using general knowledge
- Know and understand how to install Multi-phase meter (whole current) using work-specific knowledge

Learning Outcome 1	
Plan for work activities to install Multi-phase meter (whole current)	
Assessment Criteria	
1.1	Identify the correct work location using available information
1.2	Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations
1.3	Plan the work to be undertaken in line with risk assessment, taking into account factors: a. Location b. Content c. sequence of tasks d. personnel
1.4	Inform all affected parties of their intended work plan, in line with company procedures

Learning Outcome 2	
Prepare resources to install Multi-phase meter (whole current)	
Assessment Criteria	
2.1	Select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
2.2	Apply control measures to ensure the work area is fit for purpose in line with risk assessment which must include: a. Signs and barriers b. Demarcation work area c. Control and removal of hazards d. Contamination protection
2.3	Identify the correct meter and associated equipment to be worked on, in line with work plan
2.4	Select and prepare tools and equipment compatible with the work plan, risk assessment and company procedures
2.5	Check tools and equipment are fit for purpose to carry out the identified work in line with company procedures
2.6	Confirm meter details and record meter readings
2.7	Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Learning Outcome 3	
Install Multi-phase meter (whole current)	
Assessment Criteria	
3.1	Install identified multi phase meter using selected tools and equipment, in line with work plan, risk assessment and company procedures. Installation to include **ONE** electronic Multi-phase meter and any **ONE** of the following: Multi phase Multi rate meter with communication method, Mechanical Multi phase meter, Mechanical Multi phase Multi rate with or without off peak supplies, Electronic Multi phase Multi –rate meter with or without off peak supplies
3.2	Carry out appropriate testing procedures on completed installations, in line with company procedures
3.3	Check the completed installation to ensure it meets and complies with work instructions and equipment specifications
3.4	Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person
3.5	Work throughout the duration of the work in accordance with (a) safe working and environmental practices, (b) company procedures, (c) health and safety regulations and (d) environmental legislation
3.6	Complete all required post activity documentation in line with company policy
3.7	Ensure all tools and equipment are stored in line with company policy
3.8	Ensure hazardous and non-hazardous waste material are dealt with and disposed of in accordance with company and statutory procedures
3.9	Ensure the work area is left in a safe condition compatible with company procedures

Learning Outcome 4	
Know and understand how to install Multi-phase meter (whole current) using general knowledge	
Assessment Criteria	
4.1	Demonstrate they know the main principles of health and safety and environmental legislation and regulations
4.2	Demonstrate they know the company reporting lines and authorisation roles and responsibilities
4.3	Demonstrate they know the company policies and procedures that directly impact on the work to be undertaken

Learning Outcome 5	
Know and understand how to install Multi-phase meter (whole current) using work-specific knowledge	
Assessment Criteria	
5.1	Demonstrate they know the company procedures and processes for reporting problems with tools and equipment
5.2	Demonstrate they know how to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3	Demonstrate they know the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
5.4	Demonstrate they know how to read and interpret instructions on how to use tools and equipment safely and processes and requirements for undertaking routine checks
5.5	Demonstrate they know what personal protective equipment needs to be worn when undertaking work activities

Learning Outcome 5 Continued	
Know and understand how to install Multi-phase meter (whole current) using work-specific knowledge	
Assessment Criteria	
5.6	Demonstrate they know what materials and substances are dangerous and hazardous to health
5.7	Demonstrate they know how to maintain safe working and environmental practices throughout the duration of the work
5.8	Demonstrate they know how to minimise risks to self and others when undertaking work activities
5.9	Demonstrate they know the company work instruction, information reporting systems and documentation
5.10	Demonstrate they know how to respond to the different types and categories of emergency situations that might occur
5.11	Demonstrate they know how to install plant and apparatus using specified principles, methods, processes and procedures
5.12	Demonstrate they know how to recognise and report inaccurate and incorrect work instructions and documentation

F/600/4000 – Change Multi Phase Meter, Whole Current, New Connection

This unit is about changing single phase metering and associated equipment in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves the wearing of personal protective equipment whilst carrying out the work. By completing this unit, you show you are competent in:

- Plan for work activities to change Multi-phase meter (whole current)
- Preparing resources to change Multi-phase meter (whole current)
- change Multi-phase meter (whole current)
- Know and understand how to change Multi-phase meter (whole current) using general knowledge
- Know and understand how to change Multi-phase meter (whole current) using work-specific knowledge

Learning Outcome 1	
Plan for work activities to install Multi-phase meter (whole current)	
Assessment Criteria	
1.1	Identify the correct work location using available information
1.2	Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations
1.3	Plan the work to be undertaken in line with risk assessment, taking into account factors: a. Location b. Content c. sequence of tasks d. personnel
1.4	Inform all affected parties of their intended work plan, in line with company procedures

Learning Outcome 2	
Prepare resources to change Multi-phase meter (whole current)	
Assessment Criteria	
2.1	Select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
2.2	Apply control measures to ensure the work area is fit for purpose in line with risk assessment which must include: a. Signs and barriers b. Demarcation work area c. Control and removal of hazards d. Contamination protection
2.3	Identify the correct meter and associated equipment to be worked on, in line with work plan
2.4	Select and prepare tools and equipment compatible with the work plan, risk assessment and company procedures
2.5	Check tools and equipment are fit for purpose to carry out the identified work in line with company procedures
2.6	Confirm meter details and record meter readings
2.7	Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Learning Outcome 3	
Change Multi-phase meter (whole current)	
Assessment Criteria	
3.1	Remove the identified multi phase meter using selected tools and equipment, in line with work plan, risk assessment and company procedures. Removal must include **ONE** Multi-phase single rate meter and any **ONE** of the following: Multi phase Mechanical meter with or without timeswitch and teleswitch, Electronic Multi phase meter, Multi rate meter with communication method
3.2	Follow job instructions and company procedures to replace the removed meters with any **TWO** of the following: Multi phase Multi rate meter with communication method, Mechanical Multi phase meter, Mechanical Multi phase Multi rate with or without off peak supplies, Electronic Multi phase meter with or without off peak supplies
3.3	Carry out appropriate testing procedures on completed installations, in line with company procedures
3.4	Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person
3.5	Work throughout the duration of the work in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
3.6	Complete all required post activity documentation in line with company policy
3.7	Ensure all tools and equipment are stored in line with company policy
3.8	Ensure hazardous and non-hazardous waste material are dealt with and disposed of in accordance with company and statutory procedures
3.9	Ensure the work area is left in a safe condition compatible with company procedures

Learning Outcome 4	
Know and understand how to change Multi-phase meter (whole current) using general knowledge	
Assessment Criteria	
4.1	Demonstrate they know the main principles of health and safety and environmental legislation and regulations
4.2	Demonstrate they know the company reporting lines and authorisation roles and responsibilities
4.3	Demonstrate they know the company policies and procedures that directly impact on the work to be undertaken

Learning Outcome 5	
Know and understand how to change Multi-phase meter (whole current) using work-specific knowledge	
Assessment Criteria	
5.1	Demonstrate they know the company procedures and processes for reporting problems with tools and equipment
5.2	Demonstrate they know how to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3	Demonstrate they know the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
5.4	Demonstrate they know how to read and interpret instructions on how to use tools and equipment safely and processes and requirements for undertaking routine checks

Learning Outcome 5 Continued	
Know and understand how to install Multi-phase meter (whole current) using work-specific knowledge	
Assessment Criteria	
5.5	Demonstrate they know what personal protective equipment needs to be worn when undertaking work activities
5.6	Demonstrate they know what materials and substances are dangerous and hazardous to health
5.7	Demonstrate they know how to maintain safe working and environmental practices throughout the duration of the work
5.8	Demonstrate they know how to minimise risks to self and others when undertaking work activities
5.9	Demonstrate they know the procedures and documentation used for reporting problems
5.10	Demonstrate they know the company work instruction, information reporting systems and documentation
5.11	Demonstrate they know how to respond to the different types and categories of emergency situations that might occur
5.12	Demonstrate they know how to install plant and apparatus using specified principles, methods, processes and procedures
5.13	Demonstrate they know how to recognise and report inaccurate and incorrect work instructions and documentation

M/600/4008 – Install Single Phase Meter and Associated Equipment on Multi phase cut-out New Connection

This unit is about changing single phase metering and associated equipment in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves the wearing of personal protective equipment whilst carrying out the work. By completing this unit, you show you are competent in:

- Plan for work activities to install single-phase meter and associated equipment on Multi phase cut-out
- Preparing resources to install single-phase meter and associated equipment on Multi phase cut-out
- Install single-phase meter and associated equipment on Multi phase cut-out
- Know and understand how to install single-phase meter and associated equipment on Multi phase cut-out using general knowledge
- Know and understand how to install single-phase meter and associated equipment on Multi phase cut-out using work-specific knowledge

Learning Outcome 1	
Plan for work activities to install single-phase meter and associated equipment on Multi phase cut-out	
Assessment Criteria	
1.1	Identify the correct work location using available information
1.2	Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations
1.3	Plan the work to be undertaken in line with risk assessment, taking into account factors: a. Location b. Content c. sequence of tasks d. personnel
1.4	Inform all affected parties of their intended work plan, in line with company procedures

Learning Outcome 2	
Preparing resources to install single-phase meter and associated equipment on Multi phase cut-out	
Assessment Criteria	
2.1	Select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
2.2	Apply control measures to ensure the work area is fit for purpose in line with risk assessment which must include: a. Signs and barriers b. Demarcation work area c. Control and removal of hazards d. Contamination protection
2.3	Identify the correct meter and associated equipment to be worked on, in line with work plan
2.4	Select and prepare tools and equipment compatible with the work plan, risk assessment and company procedures
2.5	Check tools and equipment are fit for purpose to carry out the identified work in line with company procedures

Learning Outcome 2 Continued	
Preparing resources to install single-phase meter and associated equipment on Multi phase cut-out	
Assessment Criteria	
2.6	Confirm meter details and record meter readings
2.7	Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Learning Outcome 3	
Install single-phase meter and associated equipment on Multi phase cut-out	
Assessment Criteria	
3.1	Install identified single multi phase meter using selected tools and equipment, in line with work plan, risk assessment and company procedures. Installation to include **ONE** single-phase singe rate meter and **ONE** of the following: Multi rate with communication method, Two rate with timeswitch and teleswitch with or without off peak supplies, Multi rate 5 terminal meter, Multi rate meter, Two rate key and token with or without communication method, with or without off peak
3.2	Install an isolator on at least **ONE** occasion, in line with company procedures and work plan
3.3	Carry out company required testing procedures on completed installations, in line with company procedures
3.4	Check the installation meets and complies with work instructions and equipment specifications
3.5	Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person
3.6	Work throughout the duration of the work in accordance with (a) safe working and environmental practices, (b) company procedures, (c) health and safety regulations and (d) environmental legislation
3.7	Complete all required post activity documentation in line with company policy
3.8	Ensure all tools and equipment are stored in line with company policy
3.9	Ensure hazardous and non-hazardous waste material are dealt with and disposed of in accordance with company and statutory procedures
3.10	Ensure the work area is left in a safe condition compatible with company procedures

Learning Outcome 4	
Know and understand how to install single-phase meter and associated equipment on Multi phase cut-out using general knowledge	
Assessment Criteria	
4.1	Demonstrate they know the main principles of health and safety and environmental legislation and regulations
4.2	Demonstrate they know the company reporting lines and authorisation roles and responsibilities
4.3	Demonstrate they know the company policies and procedures that directly impact on the work to be undertaken

Learning Outcome 5	
Know and understand how to install single-phase meter and associated equipment on Multi phase cut-out using work-specific knowledge	
Assessment Criteria	
5.1	Demonstrate they know the company procedures and processes for reporting problems with tools and equipment
5.2	Demonstrate they know how to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3	Demonstrate they know the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
5.4	Demonstrate they know how to read and interpret instructions on how to use tools and equipment safely and processes and requirements for undertaking routine checks
5.5	Demonstrate they know what personal protective equipment needs to be worn when undertaking work activities
5.6	Demonstrate they know what materials and substances are dangerous and hazardous to health
5.7	Demonstrate they know how to maintain safe working and environmental practices throughout the duration of the work
5.8	Demonstrate they know how to minimise risks to self and others when undertaking work activities
5.9	Demonstrate they know the company work instruction, information reporting systems and documentation
5.10	Demonstrate they know how to respond to the different types and categories of emergency situations that might occur
5.11	Demonstrate they know how to install plant and apparatus using specified principles, methods, processes and procedures
5.12	Demonstrate they know how to recognise and report inaccurate and incorrect work instructions and documentation

T/600/4009 – Change Multi Phase Meter, Whole Current, New Connection

This unit is about changing single phase metering and associated equipment in an electrical power engineering environment. It includes the processes and procedures to be followed to make sure that the completed work meets the quality assurance and operating specifications set by the organisation. It also involves the wearing of personal protective equipment whilst carrying out the work. By completing this unit, you show you are competent in:

- Plan for work activities to change single phase meter and associated equipment on Multi phase cut-outs
- Preparing resources to change single phase meter and associated equipment on Multi phase cut-outs
- Change single phase meter and associated equipment on Multi phase cut-outs
- Know and understand how to change single phase meter and associated equipment on Multi phase cut-outs using general knowledge
- Know and understand how to change single phase meter and associated equipment on Multi phase cut-outs using work-specific knowledge

Learning Outcome 1	
Plan for work activities to change single phase meter and associated equipment on Multi phase cut-outs	
Assessment Criteria	
1.1	Identify the correct work location using available information
1.2	Conduct a site specific risk assessment, completing required documentation, in line with health and safety regulations
1.3	Plan the work to be undertaken in line with risk assessment, taking into account factors: a. Location b. Content c. sequence of tasks d. personnel
1.4	Inform all affected parties of their intended work plan, in line with company procedures

Learning Outcome 2	
Preparing resources to change single phase meter and associated equipment on Multi phase cut-outs	
Assessment Criteria	
2.1	Select, inspect and wear personal protective equipment (PPE) compatible with the work plan, risk assessment and health and safety regulations
2.2	Apply control measures to ensure the work area is fit for purpose in line with risk assessment which must include: a. Signs and barriers b. Demarcation work area c. Control and removal of hazards d. Contamination protection
2.3	Identify the correct meter and associated equipment to be worked on, in line with work plan
2.4	Select and prepare tools and equipment compatible with the work plan, risk assessment and company procedures
2.5	Check tools and equipment are fit for purpose to carry out the identified work in line with company procedures
2.6	Confirm meter details and record meter readings

Learning Outcome 2 Continued
Preparing resources to change single phase meter and associated equipment on Multi phase cut-outs
Assessment Criteria
2.7 Report faults with tools, equipment and PPE, including that which is unavailable, in line with company procedures

Learning Outcome 3
Change single phase meter and associated equipment on Multi phase cut-outs
Assessment Criteria
3.1 Remove the identified single phase meter and associated equipment using selected tools and equipment, in line with work plan, risk assessment and company procedures. Removal must include **ONE** Single-phase single rate meter and any **ONE** of the following: Multi rate with communication method, Two rate with timeswitch and teleswitch with or without off peak supplies, Multi rate 5 terminal meter, Multi-rate meter, Two rate key and token with or without communication method with or without off peak supplies
3.2 Replace the removed meters in line with company procedures and work plan with any **TWO** of the following: Multi rate with communication method, Mechanical Single phase meter, Electronic Single phase meter, Multi rate with timeswitch and teleswitch with or without off peak supplies, Multi rate 5 terminal meter, Check meter, Multi rate meter, Multi rate key and token with or without communication method with or without off peak supplies
3.3 Carry out appropriate testing procedures on completed installations, in line with company procedures
3.4 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person
3.5 Work throughout the duration of the work in accordance with safe working and environmental practices, company procedures, health and safety regulations and environmental legislation
3.6 Complete all required post activity documentation in line with company policy
3.7 Ensure all tools and equipment are stored in line with company policy
3.8 Ensure hazardous and non-hazardous waste material are dealt with and disposed of in accordance with company and statutory procedures
3.9 Ensure the work area is left in a safe condition compatible with company procedures

Learning Outcome 4
Know and understand how to change single phase meter and associated equipment on Multi phase cut-outs using general knowledge
Assessment Criteria
4.1 Demonstrate they know the main principles of health and safety and environmental legislation and regulations
4.2 Demonstrate they know the company reporting lines and authorisation roles and responsibilities
4.3 Demonstrate they know the company policies and procedures that directly impact on the work to be undertaken

Learning Outcome 5	
Know and understand how to change single phase meter and associated equipment on Multi phase cut-outs using work-specific knowledge	
Assessment Criteria	
5.1	Demonstrate they know the company procedures and processes for reporting problems with tools and equipment
5.2	Demonstrate they know how to read and interpret procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
5.3	Demonstrate they know the processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
5.4	Demonstrate they know how to read and interpret instructions on how to use tools and equipment safely and processes and requirements for undertaking routine checks
5.5	Demonstrate they know what personal protective equipment needs to be worn when undertaking work activities
5.6	Demonstrate they know what materials and substances are dangerous and hazardous to health
5.7	Demonstrate they know how to maintain safe working and environmental practices throughout the duration of the work
5.8	Demonstrate they know how to minimise risks to self and others when undertaking work activities
5.9	Demonstrate they know the procedures and documentation used for reporting problems
5.10	Demonstrate they know the company work instruction, information reporting systems and documentation
5.11	Demonstrate they know how to respond to the different types and categories of emergency situations that might occur
5.12	Demonstrate they know how to install plant and apparatus using specified principles, methods, processes and procedures
5.13	Demonstrate they know how to recognise and report inaccurate and incorrect work instructions and documentation

Assessment Requirements

Unit Ref: A/502/9855 - Working safely in the Energy and Utilities sector

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory skill-based units over a minimum of **two** separate occasions. A minimum of **one** assessment must be based on evidence from the workplace. (Successful completion of the A/502/9855 Knowledge Assessment is also required).

Unit Ref: L/502/9858 - Working practices in the Energy and Utilities sector

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory skill-based units over a minimum of **two** separate occasions. A minimum of **one** assessment must be based on evidence from the workplace.

Unit Ref: J/503/0233 - Using and communicating technical information in the Energy & Utilities sector

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory and optional skill-based units over a minimum of **two** separate occasions. A minimum of **one** assessment must be based on evidence from the workplace.

Unit Ref: F/502/9856 - Delivering customer service when working within the Energy and Utilities sector

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory skill-based units over a minimum of **two** separate occasions. A minimum of **one** assessment must be based on evidence from the workplace.

Unit Ref: A/503/0231 - Install and commission communication systems for Smart Meters

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the mandatory skill-based units over a minimum of **two** separate occasions. A minimum of one assessment must be based on evidence from the workplace. (Successful completion of the A/503/0231 Knowledge Assessment is also required).

Unit Ref: M/600/3988 - Install single phase meter and associated equipment (new connection)

A minimum of **two** assessments are required for this unit. A minimum of **one** assessment must include full electricity meter equipment and associated communications installation in a workplace environment. A minimum of **one** assessment must be based on evidence using the National Assessment Specification. (the knowledge criteria is achieved through written responses from the learner).

Unit Ref: A/600/3993 - Change single phase meter and associated equipment

A minimum of **two** assessments are required for this unit with a minimum of **one** of these assessments being observed in the workplace. (the knowledge criteria is achieved through written responses from the learner).

J/600/4001 - Install Multi-Phase meter, whole current, new connection

A minimum of **two** assessments are required for this unit with a minimum of **one** of these assessments being observed in the workplace. (the knowledge criteria is achieved through written responses from the learner)

J/600/4000 - Change Multi-Phase meter, whole current

A minimum of **two** assessments are required for this unit with a minimum of **one** of these assessments being observed in the workplace. (the knowledge criteria is achieved through written responses from the learner)

J/600/4008 - Install Single-Phase meter and Associated Equipment on Multi-Phase, cut-out, new connection

A minimum of **two** assessments are required for this unit with a minimum of **one** of these assessments being observed in the workplace. (the knowledge criteria is achieved through written responses from the learner)

J/600/4009 - Change Single-Phase meter and Associated Equipment on Multi-Phase, cut-out, new connection

A minimum of **two** assessments are required for this unit with a minimum of **one** of these assessments being observed in the workplace. (the knowledge criteria is achieved through written responses from the learner)

Unit Ref: K/503/0256 - Applied practices and principles for installing low pressure natural gas smart meters up to U6 only
Knowledge and understanding unit only (K/503/0256 - Knowledge Assessment)

EUSkills Assessment Strategy for Gas Specific Units (F/503/0232, J/502/9857 and F/505/0884)

Unit Ref: F/503/0232 - Prepare, install and commission low pressure natural gas smart meter and regulator up to 6.0m³/hr

A minimum of **two** assessments are required for this unit, **one** in the workplace and **one** 'in-centre' F/503/0232 performance assessment provided by BPEC Certification Ltd. The remaining assessments can either be based in the workplace or in a realistic working environment (See below for the Gas Utilisation Specific Assessment Strategy (Appendix F November 2013) for full assessment requirements). (Successful completion of the F/503/0232 knowledge assessments is also required for this unit).

<table>
<tr><th colspan="2">Unit Ref: F/503/0232 Prepare, Install and Commission Low Pressure Natural Gas Smart Meter and Regulator up to 6.0m³/hr</th></tr>
<tr><th>Unit summary</th><th>Range</th></tr>
<tr><td>To complete this unit, the learner must show competence in:
○ Planning and preparing work activities to install natural gas smart meters (up to 6m³/hr) on low pressure gas systems.
○ Preparing resources to install natural gas smart meters (up to 6m³/hr) on low pressure gas systems.
○ De-commissioning natural gas smart meters and regulators (up to 6m³/hr) on low pressure gas services.
○ Installing natural gas smart meters (up to 6m³/hr) on low pressure gas services.
○ Commissioning natural gas smart meters (up to 6m³/hr) on low pressure gas services</td><td>Primary Range:
○ Smart Meter ≤ 6 m^3/h
Secondary Range:
○ Low Pressure Fed Supply
○ Internal installation
○ Surface or Built In Meter Box
○ Semi Concealed Meter Box
○ New Installation
○ Installation Exchange</td></tr>
<tr><th>Experience</th><th>Performance Assessments</th></tr>
<tr><td rowspan="2">○ A minimum of 10[1] separate installation occasions must occur with the learner demonstrating experience across the assessment criteria on each occasion
○ A minimum of 6[1] of the installation occasions must be from the workplace</td><td>○ Workplace[2] x 1 minimum
○ Realistic working environment (centre) x 1 minimum (F/503/0232 - performance assessment)</td></tr>
<tr><td>Knowledge Assessments
○ x 1 (F/503/0232 - knowledge assessment)</td></tr>
<tr><th colspan="2">Notes</th></tr>
<tr><td colspan="2">[1] Includes the assessment occasions
[2]This assessment may be undertaken by gas utilisation qualified personnel without an assessor qualification</td></tr>
</table>

Unit Ref: J/502/9857 – Low pressure gas smart meter tightness testing and direct purging

Learners must be allowed to practice on all of the identified components and a minimum of **one** assessment is required for this unit, which must be conducted in the workplace. (See below for the Gas Utilisation Specific Assessment Strategy (Appendix F) Final Version for full assessment requirements).

<table>
<tr><th colspan="2">Unit Ref: J/502/9857 - Low Pressure Gas Smart Meter Tightness Testing and Direct Purging</th></tr>
<tr><th>Unit summary</th><th>Range</th></tr>
<tr><td>To complete this unit, the learner must show competence in:
○ Planning and preparing work activities for tightness testing and direct purging - low pressure only
○ De-commissioning natural gas systems and components to industry standards
○ Tightness testing and direct purging low pressure natural gas smart meters</td><td>Primary Range:
○ Natural gas installations
Secondary Range:
○ Purge natural gas installation with volume ≤ 0.02 m^3
○ Purge natural gas installation with volume > 0.02 m^3 ≤ 0.035 m^3
○ New installation
○ Existing installation</td></tr>
<tr><th>Experience</th><th>Performance Assessments</th></tr>
<tr><td rowspan="2">○ A minimum of 5[1] separate installation occasions must occur with the learner demonstrating experience across the assessment criteria on each occasion
○ A minimum of 3[1] of the installation occasions must be from the workplace</td><td>○ Workplace[2] x 1 minimum
○ Realistic working environment (centre) x 1 minimum</td></tr>
<tr><td>Knowledge Assessments
○ x 1 (J/502/9857 knowledge assessment)</td></tr>
<tr><th colspan="2">Notes</th></tr>
<tr><td colspan="2">[1] Includes the assessment occasions
[2]This assessment may be undertaken by gas utilisation qualified personnel without an assessor qualification</td></tr>
</table>

Unit Ref: F/505/0884 - Prepare, install and commission medium pressure natural gas smart meter and regulator up to 6.0m³/hr

A minimum of **two** assessments are required for this unit, **one** in the workplace and **one** 'in-centre' F/505/0884 performance assessment provided by BPEC Certification Ltd. The remaining assessments can either be based in the workplace or in a realistic working environment (See below for the Gas Utilisation Specific Assessment Strategy (Appendix F November 2013) for full assessment requirements). (Successful completion of the F/505/0884 knowledge assessments is also required for this unit).

<table>
<tr><th colspan="2">Unit Ref: F/505/0884 - Prepare, Install and Commission Medium Pressure Natural Gas Smart Meter and Regulator up to 6.0m³/hr</th></tr>
<tr><th>Unit summary</th><th>Range</th></tr>
<tr><td>To complete this unit, the learner must show competence in:
○ Planning and preparing work activities to install natural gas smart meters (up to 6m³/hr) on medium pressure gas systems.
○ De-commissioning natural gas smart meters and regulators (up to 6m³/hr) on medium pressure gas services.
○ Installing natural gas smart meters (up to 6m³/hr) on medium pressure gas services.
○ Commissioning natural gas smart meters (up to 6m³/hr) on medium pressure gas services
○ Liase with other persons and resolve problems relating to decommissioning, installing, exchanging and commissioning smart gas meters and regulators (up to 6m³/hr) on medium pressure gas services.</td><td>Primary Range:
○ Smart Meter ≤ 6 m^3/h
Secondary Range:
○ Medium Pressure Fed Supply
○ Regulator Incorporating a Slam Shut Valve (SSV) (PRS 28/E)
○ Regulator Incorporating a Metering Installation Excess Flow Valve (MIEFV) (PRS 29/E)
○ Surface or Built In Meter Box
○ Semi Concealed Meter Box
○ New Installation
○ Installation Exchange
(Existing Installation with NO Meter Inlet Valve (MIV))</td></tr>
<tr><th>Experience</th><th>Performance Assessments</th></tr>
<tr><td rowspan="2">○ A minimum of 5[1] separate installation occasions must occur with the learner demonstrating experience across the assessment criteria on each occasion
○ A minimum of 3[1] of the installation occasions must be from the workplace</td><td>○ Workplace[2] x 1 minimum
○ Realistic working environment (centre) x 1 minimum (F/505/0884 - performance assessment)</td></tr>
<tr><td>Knowledge Assessments
○ x 1 (F/505/0884 - knowledge assessment)</td></tr>
<tr><th colspan="2">Notes</th></tr>
<tr><td colspan="2">[1] Includes the assessment occasions
[2]This assessment may be undertaken by gas utilisation qualified personnel without an assessor qualification</td></tr>
</table>

Learners undertaking Units F/503/0232 and F/505/0884

Combined Smart Gas Meter Installation

Unit Ref: F/503/0232 and F/505/0884 - Prepare, Install and Commission Low and Medium Pressure Natural Gas Smart Meter and Regulator up to 6.0m³/hr

Unit summary	Range
To complete this unit, the learner must show competence in: ○ Planning and preparing work activities to install natural gas smart meters (up to 6m³/hr) on medium pressure gas systems. ○ De-commissioning natural gas smart meters and regulators (up to 6m³/hr) on medium pressure gas services. ○ Installing natural gas smart meters (up to 6m³/hr) on medium pressure gas services. ○ Commissioning natural gas smart meters (up to 6m³/hr) on low and medium pressure gas services ○ Liase with other persons and resolve problems relating to decommissioning, installing, exchanging and commissioning smart gas meters and regulators (up to 6m³/hr) on low and medium pressure gas services.	**Primary Range:** ○ Smart Meter ≤ 6 m^3/h **Secondary Range:** ○ Low Pressure Fed Supply ○ Medium Pressure Fed Supply ○ Regulator Incorporating a Slam Shut Valve (SSV) (PRS 28/E) ○ Regulator Incorporating a Metering Installation Excess Flow Valve (MIEFV) (PRS 29/E) ○ Surface or Built In Meter Box ○ Semi Concealed Meter Box ○ New Installation ○ Installation Exchange (Existing Installation with NO Meter Inlet Valve (MIV))

Experience	Performance Assessments
○ A minimum of **10** separate installation occasions must occur with the learner demonstrating experience across the assessment criteria on each occasion ○ A minimum of **8** of the installation occasions must be from the workplace	○ Workplace x **2** minimum ○ Realistic working environment (centre) x **2** minimum (F/503/0232 and F/505/0884 performance assessment)
	Knowledge Assessments
	○ x **1** (F/503/0232 - knowledge assessment) ○ x **1** (F/505/0884 - knowledge assessment)

Notes

One assessment to be on a **low pressure fed meter**, **one** assessment to be on a **medium pressure fed meter**.
The documented numbers required to be evidenced do include the assessment occasions
Four assessments to be on a **low pressure fed meter**, **four** assessments to be on a **medium pressure fed meter**

Scheme Documentation

The following documentation will also be supplied by BPEC Certification Ltd. to support the delivery of the Smart Metering qualifications.

- Learner Qualification Manual (Gas) (Power)
- Unit Summative Assessment (USA) documentation
  - Learner Job Sheets (performance assessments)
  - Question papers (knowledge and understanding assessments)
- Learner Result Form
- Evidence Forms

Assessment Documentation

Performance Assessments

For unit F/503/0232 and F/505/0884 - (prepare, install and commission low pressure natural gas smart meter and regulator up to 6.0m^3/hr) and (prepare, install and commission medium pressure natural gas smart meter and regulator up to 6.0m3/hr) , learners will be required to successfully complete a unit summative (performance) assessment. A 'Learner Job Sheet'* (and supporting assessor guidance/rationale) is provided by BPEC Certification Ltd. that sets out the assessment requirements.

*The completed Unit Summative Assessment (Performance) document **must** be retained in the Centre Portfolio only until the qualification has been completed. The completed Unit Summative Assessment (Performance) documentation **must** then be sent to BPEC Certification Ltd when learner certification is claimed – **LEARNER UNIT SUMMATIVE ASSESSMENT (PERFORMANCE) DOCUMENTATION MUST NOT BE RETAINED IN THE LEARNER PORTFOLIO**

Marking Performance Assessments

The pass rate for the performance assessments is 100%

1. First Attempt - learners are given a first attempt in all areas of the performance assessment
2. Second Attempt – performance areas not satisfactorily completed will be re-attempted
3. At the assessors discretion, the learner is re-assessed by oral questioning and/or observing the performance in an attempt to establish competence in all remaining areas
4. Learners who have not achieved the 100% pass mark at this stage will be deemed to have failed the performance assessment. Learners wishing to retake the assessment will be required to re-attempt the full performance assessment in its entirety

Knowledge and Understanding Assessments

The units listed below all require the learner to complete a multiple choice knowledge assessment. The knowledge assessments (and supporting rationale) are provided by BPEC Certification Ltd.

- A/502/9855 - Working Safely in the Energy and Utilities sector
- A/503/0231 - Install and Commission Communication Systems for Smart Meters
- K/503 0256 - Applied Practices and Principles for Installing Low Pressure Natural Gas Smart Meters up to U6 only
- F/503/0232 - Prepare, Install and Commission Low Pressure Natural Gas Smart Meter and Regulator up to 6.0m^3/hr
- F/505/0884 - Prepare, Install and Commission Medium Pressure Natural Gas Smart Meter and Regulator up to 6.0m^3/hr
- J/502/9857 - Low Pressure Gas Smart Meter Tightness Testing and Direct Purging

KNOWLEDGE ASSESSMENT QUESTIONS AND ANSWERS MUST NOT BE RETAINED IN THE LEARNER PORTFOLIO

The completed knowledge assessment papers (questions and answers) must be retained in the centre portfolio

Marking Knowledge Assessments

The pass rate for the knowledge assessments is 100%

1. Following the learners first attempt, the assessor shall mark the attempt using the marking overlay for the relevant assessment
2. If the learner does not achieve the 100% pass mark, they will be given a second attempt at answering any questions answered incorrectly on the first attempt
3. Oral Verification - providing a level of achievement of 80% has been attained, the learner will be orally questioned in an attempt to establish competence in all remaining areas
4. Learners who have not achieved the 100% pass mark at this stage will be deemed to have failed the knowledge assessment. Learners wishing to retake the assessment will be required to re-attempt the full theory paper in its entirety

Learner Result/Tracker Form

A Learner Result/Tracker Form has been produced for each of the Smart Metering qualifications. This document shall be used to record that the learner has completed the whole qualification in a satisfactory manner. The document shall be completed and signed by the centre assessor and the internal verifier.

The completed Learner Result/Tracker Form shall be sent to BPEC Certification Ltd. (with attached passport photo for Gas and Dual Fuel) and the completed job sheet F/503/0232 and F/505/0884 and any associated oral verification sheets. Copies of the Learner Result/Tracker Form shall also be retained in the Learner Portfolio and the Centre Portfolio.

Qualification Manual

A Qualification Manual has been produced for the Gas and Power qualifications. Both manuals should be used where a learner undertakes the Dual Fuel route.
Contained within the manuals are Unit Evidence Checklists for each unit. This document shall be used to record that the learner has completed the units in a satisfactory manner. Each section of the document shall be completed and the document signed by the learner, the assessor(s) and the internal verifier.

The Unit Evidence Checklists shall be used by the assessor to cross-reference the unit performance criteria to the evidence collected in order to demonstrate learner competence. The Unit Evidence Checklists and the evidence collected shall be retained in the learner qualification manual.

Evidence Forms

BPEC Certification Ltd. has designed an Evidence Form which may be used to capture evidence relating to a learners performance. Such evidence may include:

- Assessor feedback to the learner
- Records of supplementary questions posed by the assessor and the learner responses
- Learner feedback – statements made by the learner to clarify their competence
- Witness testimony – statements made by witnesses e.g. supervisor, customer etc. relating to the competence of the learner

Portfolio Contents

The table below identifies the contents to be retained within the learner and the centre portfolios:

	Learner Portfolio	Centre Portfolio
Previous qualifications	✓	✓
Learner Result/Tracker form	✓	✓
Qualification Manual	✓	✓
Evidence collected e.g. work records, evidence forms	✓	
Performance assessment summary (front sheets)	✓	✓

Under no circumstances, must assessment documentation (performance and knowledge) be retained in the Learner Portfolio

Staff Qualification Requirements

Assessors

The centre MUST nominate all Assessors to BPEC Certification Ltd. for approval prior to them conducting any assessments. Assessors may be employed by the Centre (Centre Based Assessors) or be work based (Workplace Assessors) who may or may not be from the same organisation as the Learners.

Assessors MUST be vocationally and occupationally competent in the areas they are assessing and have a thorough knowledge of the National Occupational Standards

The assessor must be able to provide appropriate documented evidence that demonstrates they have a minimum of 5 years proven occupational experience in the activities they will be assessing e.g. a signed and dated CV. Particular attention should be paid to providing evidence of occupational experience in the gas safety critical areas being assessed.

Where Assessors undertake assessments in the workplace, and are not supported by a suitable gas operative, then they or their employer must be a member of an appropriate Gas Registration Body in accordance with the Gas Safety (Installation and Use) Regulations. In these circumstances they should also hold suitable insurance for this activity.

Qualifications

The assessor MUST also hold one of the following assessor qualifications:

- QCF Level 3 Award “Assessing Vocational Related Achievement – in Centres/Colleges or Training Providers” or
- QCF Level 3 Certificate “Assessing Vocationally Related Achievement – in Centres/Colleges and The Workplace” or
- A1 or D32 /D33 with an Upgrade to A1 as a minimum*

Assessors holding D units must have evidence of Continuing Professional Development (CPD) to demonstrate compliance with the A units. Evidence of CPD will be sought by the External Verifier for all Assessors approved to assess for the centre.

‘Candidate assessors’ who are working towards their assessor qualifications must always be supervised by a qualified assessor. They should have a clear action plan for achieving the assessor

qualification(s), (assessor approval will be withdrawn if the assessor qualification/units have not been attained within a period of 18 months).

Gas Assessors

Special arrangements for assessments carried out in: Diploma in Gas Smart Metering 2.5 - 6m³/hr only

While holding one of the previously listed industry qualifications is not a mandatory requirement in this case, Assessors must be technically qualified in domestic gas installation/maintenance and hold a current certificate of gas safety competence that includes Gas Metering and is not more than 5 years old (either current ACS Certificates of Gas Safety Competence or a 6012 S/NVQ are acceptable). Workplace evidence for units F/503/0232, J/502/9857and F/505/0884 may be gathered by a trained, but not necessarily qualified assessor; i.e. an 'Expert Witness', to form a portfolio that is then assessed as diverse evidence, by a qualified assessor.

Where assessors undertake gas assessments in the workplace, and are not supported by a suitable gas operative, then they or their employer must be a member of an appropriate Gas Registration Body in accordance with the Gas Safety (Installation and Use) Regulations. In these circumstances they should also hold suitable insurance for this activity.

Workplace Electrical Assessors

While holding one of the previously listed industry qualifications is not a mandatory requirement in this case, Assessors must be technically qualified in the installation of electric meters.Workplace evidence for units M/600/3988, A/600/3993, J/600/4001, F/600/4000, M/600/4008 and T/600/4009 may be gathered by a trained, but not necessarily qualified assessor; i.e. an 'Expert Witness', to form a portfolio that is then assessed as diverse evidence, by a qualified assessor.

Expert witness Roles and Responsibilities

- To observe the Learner's performance undertaking practical assessment tasks in the workplace
- Using the assessment criteria provided, determine whether or not the learner has completed the tasks satisfactorily
- To satisfactorily complete the assessment documentation to reflect the outcomes of the assessment

Expert witness Competence Requirements

The Expert witness/ Workplace Assessors should:

- Be occupationally competent i.e. having up-to-date knowledge of each industry (for the assessment being undertaken), its settings, legislative and regulatory requirements, codes of practice, guidance. working practices and techniques
- Be familiar with the national occupational standards and be able to interpret current working practices and technologies within the area of work
- Hold an appropriate qualifications at a level at least equivalent to that of the qualification being assessed and which relates to the type of work being assessed
- Have no conflict of interest in the outcome of their evidence

(It is not necessary for expert witnesses to hold an assessor qualification, as a qualified assessor must assess the performance evidence provided by an expert witness/workplace assessor).

Internal Verifiers

Internal Verifiers should be vocationally and occupationally competent in the areas they are verifying and have a thorough knowledge of the National Occupational Standards.

The Internal Verifiers must be able to provide appropriate documented evidence that demonstrates they have a minimum of 5 years proven occupational experience in the activities they will be verifying e.g. a signed and dated CV. Particular attention should be paid to providing evidence of occupational experience in the gas safety critical areas being verified.

Qualifications

Internal Verifiers shall be technically qualified in the areas they will be internally verifying.

Where the Internal Verifiers themselves do not hold a suitable technical qualifications they must have access to technical expertise from qualified personnel, who hold the relevant qualifications, to support them where the verification requires technical support and interpretation.gt

Internal Verifiers must hold the following:

- QCF Level 3 Certificate “Assessing Vocationally Related Achievement – in Centres/Colleges and The Workplace”
- QCF Level 4 Award “ Internal Quality assurance of assessment processes and practice” or
- QCF Level 4 Certificate “leading the Internal Quality assurance of assessment processes and practice” or
- A1 or D32/D33 with an upgrade to A1 as a minimum*
- V1 or D34 with an upgrade to V1 as a minimum*

*The Teaching Qualification for Secondary Education (TQSE) or the Teaching Qualification for Further Education (TQFE) (which is recognised in Scotland) these awards are acceptable providing they are the versions that are recognised as equivalents to the A1 award. Internal Verifiers holding D units must have evidence of CPD to demonstrate compliance with the A and V units.

It is recommended that ‘Candidate Internal Verifiers’ have a clear action plan for achieving the Internal Verifier qualification(s). Internal Verifier approval will be withdrawn if the qualification / units have not been attained within the approved period (18 months).

Gas Internal Verifiers

Gas internal verifiers should be technically qualified in domestic gas installation/maintenance and hold a current certificate of gas safety competence in the areas of gas work they will be assessing that is not more than 5 years old **(either current ACS Certificates of Gas Safety Competence or a 6012 S/NVQ are acceptable)**.

Further Information

Requests for further information regarding centre/scheme approval or any aspect of assessment of the BPEC qualifications please contact:

BPEC Certification Ltd. 2 Mallard Way, Pride Park, Derby, DE24 8GX
T 0845 644 6558 F 0845 121 1931 E AOadmin@bpec.org.uk W www.bpec.org.uk

Annex 1 - Funding

BPEC Certification Ltd. does not provide details on funding as this may vary between regions. Centres should contact the appropriate funding body to check eligibility for funding and any regional/national arrangements which may apply to the centre or learners.

For funding regulatory purposes, learners should not be entered for a qualification of the same type, level and content as that of a qualification they already hold. Please see below for where to find out more about the funding arrangements.

England
Skills Funding Agency
Cheylesmore House
Quinton Road
Coventry
CV1 2WT

Email: qualifications@sfa.bis.gov.uk

https://www.gov.uk/government/collections/qualifications-approved-for-public-funding

http://data.gov.uk/dataset/learning-aim-reference-service

Scotland
Colleges should contact the Scottish Further Education Funding Council, at www.sfc.ac.uk

Training providers should contact Scottish Enterprise at www.scottish-enterprise.com or one of the Local Enterprise Companies.

Northern Ireland
Please contact the Department for Employment and Learning at www.delni.gov.uk

Wales
Centres should contact the department for education, lifelong learning and skills: www.new.wales.gov.uk

Annex 2 – Sector Skills Councils

The Sector Skills Councils have the responsibility for development of the national occupational standards and in many cases, facilitating the development of relevant sector vocational qualifications. Similarly, the Sector Skills Councils formulate the 'assessment strategy' for these qualifications, contact details of the relevant Sector Skills Council(s) are shown below:

Energy and Utility Skills Limited, Friars Gate, 1011 Stratford Road, Shirley, Solihull. B90 4BN
T 0845 077 99 22 W www.euskills.co.uk