

Level 3 Diploma in Electrical Power Engineering - CT/VT Metering (2339-34)



Accreditation number: 500/7210/9

www.cityandguilds.com
August 2009
Version V1

Qualification Units

Contents

About this document		3
Unit 053	Organise the Use of Resources (L/600/3934) 15 credits	4
Unit 054	Control of Working Parties (R/600/3935) 15 credits	5
Unit 055	Produce, Communicate and Record Technical Information (Y/600/3936) 12 credits	6
Unit 004	Customer Relations for working in the Power sector (D/600/3906) 2 credits	7
Unit 109	Change LV CT Meter (J/600/4015) 15 credits	8
Unit 110	Install LV CT Meter (D/600/4019) 21 credits	10
Unit 111	Change HV VT/CT Metering Equipment on a Remote Panel (Y/600/4021) 15 credits	12
Unit 112	Install HV VT/CT Meter on Remote Panel (H/600/4023) 15 credits	14
Unit 113	Install HV VT/CT Metering Systems up to Test Terminal Block (M/600/4025) 17 credits	16

About this document

This document contains the unit titles, accreditation numbers and content for the Level 3 Diploma in Electrical Power Engineering – CT/VT Metering.

The qualification, attesting to work-place competence, has been developed by City & Guilds in conjunction with power sector employers and the sector skills council Energy & Utility Skills (EU Skills), and is accredited on the qualifications and credit framework (QCF).

The unit accreditation numbers appear in brackets next to the title, followed by the QCF credits attached to the unit.

The structure of the qualification is made up of the following City & Guilds unit numbers:

- Group A mandatory core units (004, 053, 054, 055)
- Group B optional skill-based units (109, 110, 111, 112, 113)

To achieve the full qualification **all** group A mandatory core units must be completed along with a minimum of **two** group B optional skill-based units.

All of the performance criteria must be evidenced. In the case of each group A mandatory core unit the requisite evidence is attained through completion of the relevant skill-based units on a minimum of **two** separate occasions.

Each unit in the qualification is delivered with ten knowledge questions and their range of acceptable answers (see this qualification's relevant questions and answers document for further details). These questions must be evidenced through either natural performance or professional discussion. In the context of the skill-based units these questions may provide evidence against the knowledge and understanding criteria, which have been lifted directly from the relevant national occupational standard. Where there are gaps further oral questioning or observation will be required to confirm the criteria has been met.

For standardisation, and where appropriate, the performance and knowledge criteria are:

- prescribed with range, scope and evidence requirements
- qualified by company policies and procedures; legislation and regulations

This qualification is delivered in line with the requirements of EU Skills' assessment strategy (captured in the main qualification handbook) and in the same fashion as a national vocational qualification (NVQ).

Unit 053

Organise the Use of Resources (L/600/3934) 15 credits

This unit has been designed to ensure level three candidates in an electrical power engineering environment are able to plan, organise and control resources for self and others.

By completing this unit, you show you are competent to:

- plan the use of resources
- organise resources to be used
- control the use of resources

Performance Criteria

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the skill based units over a minimum of **two** separate occasions

Outcome 1: Plan the use of resources

- 1.1 Identify the work to be undertaken and the resources required to complete the activity to Company standards
- 1.2 Create a plan of action to use the identified resources in a safe, time efficient and cost effective manner in line with Company procedures
- 1.3 Identify all parties who will be affected by the planned work and the actions required to meet their requirements in line with Company procedures (e.g. Notification of system outage, provision of generator, access permission, traffic control, signs and barriers)

Outcome 2: Organise resources to be the used

- 2.1 Organise the availability of the resources for the work required using Company procedures and systems. Evidence to include having organised **all** of the following resources at least **once** over a minimum of **two** separate occasions:
a) People b) Materials c) Plant/machinery d) Tools/equipment
(e.g. two resources on one occasion and two on another)
- 2.2 Confirm the organised resources are available and ready for use at the correct location at the time required

Outcome 3: Control the use of resources

- 3.1 Inform all affected parties of the work to be undertaken and their responsibilities in line with Company procedures
- 3.2 Co-ordinate the use of resources ensuring they are used in accordance with Company policy and procedures
- 3.3 Monitor the effective use of the resources, taking prompt action where necessary to improve or rectify situations safely and efficiently
- 3.4 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
a) Resource availability b) Change in work plan c) Safety issues d) Time constraints
- 3.5 Report/record completion of the work carried out in accordance with Company procedures

Unit 054

Control of Working Parties (R/600/3935) 15 credits

This unit has been designed to ensure that level three candidates in an electrical power engineering environment are able to plan, organize and control the working activities of self and others.

By completing this unit, you show you are competent to:

- plan and organise working parties
- control the working party

Performance Criteria

To perform effectively in this unit, you need to evidence competent performance of all the criteria through completion of the skill based units over a minimum of **two** separate occasions

Outcome 1: Plan working party control

- 1.1 Correctly identify the work location using relevant information
- 1.2 Conduct a pre work site risk assessment completing relevant documentation in accordance with health and safety requirements and Company procedures
- 1.3 Identify the work to be undertaken and the individuals forming the working party or parties under their control
- 1.4 Identify a work plan to use the work force in a safe, time efficient and cost effective manner; in line with Company procedures. Evidence to include **all** of the following documents:
 - a) *Safety documentation*
 - b) *Risk assessments*
 - c) *Work instructions*
 - d) *Plans/diagrams*

Outcome 2: Organise the working party

- 2.1 Communicate the work plan clearly and effectively to all relevant persons under their control
- 2.2 Inform all relevant parties of the safety requirements and their responsibilities in line with the risk assessment and Company procedures
- 2.3 Confirm the information given has been understood and provide clarification where needed

Outcome 3: Control the working party

- 3.1 Co-ordinate the working party ensuring safe working practices are maintained throughout the duration of the work in accordance with Company procedures. Evidence to include the co-ordination of a working party of **two** or **more** people on **two** separate occasions (e.g. A working party of **two** may consist of you and one other person)
- 3.2 Monitor the effectiveness of the work plan, taking prompt action where necessary to improve or rectify situations safely and effectively
- 3.3 Obtain information from the working party to confirm the intended objectives have been achieved
- 3.4 Confirm all members of the working party have ceased work and that all tools and equipment have been accounted for before considering the work as complete
- 3.5 Inform all members of the working party that the work activity is complete and that no further work must take place
- 3.6 Report/record the work in accordance with Company procedures
- 3.7 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
 - a) Change in work plans
 - b) Third parties
 - c) Safety issues
 - d) Control of work party

Unit 004

Customer Relations for working in the Power sector (D/600/3906)

2 credits

This unit is designed to ensure that operatives in the electrical power engineering environment are able to (i) communicate with customers effectively (ii) provide accurate answers and information to questions asked (iii) deal effectively with any customer concerns.

By completing this unit, you show you are competent to:

- Prepare to visit a customer's premises
- Maintain effective relations with customers

Performance Criteria

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 **three** separate occasions.

Outcome 1: Prepare to visit a customer's premises

- 1.1 Determine the purpose for visiting the customer from information given
- 1.2 Identify the correct location using relevant information
- 1.3 Identify the main objectives to be achieved from the visit
- 1.4 Prepare relevant information/documentation prior to visiting the customer.
Evidence to include **three** of the following:
Personal Company identification, Plans, Work instruction, Wayleave information, Company information, Customer/client Information
- 1.5 Select appropriate work wear to visit customer's premises. Evidence to include **two** of the following:
Domestic premises, Industrial/Commercial premises, Agricultural premises, Building site, Distribution/Transmission Site

Outcome 2: Maintain effective relations with customers

- 2.1 Introduce and identify self to customer in a polite and courteous manner
- 2.2 Accurately and effectively describe the purpose of the visit to the customer
- 2.3 Listen attentively to the customer, responding to questions asked with accurate information
- 2.4 Agree the objectives with the customer giving all relevant information
- 2.5 Record/report information of visit in an appropriate manner (where applicable)
- 2.6 Respond to customer concerns/complaints in a sympathetic and effective manner. Evidence to include **two** of the following:
Resolve the customers' issues on site within own level of responsibility,
Resolve the customers issues when outside of own responsibility by referring the matter to the appropriate person on site,
Report issues which cannot be resolved on site to the appropriate person/section,
Provide the customer with appropriate contact details of other personnel/sections if requested

This unit is about changing low voltage current transformer meters 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 to:

- Plan to change LV CT Meter
- Prepare to change LV CT Meter
- Change LV CT Meter
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 1: Plan for work activities to change LV CT Meter

- 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 to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel
- 1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare resources to change LV CT Meter

- 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 appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and Company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards, contamination protection)
- 2.3 Identify the correct meter and associated equipment to be worked on, in line with company procedures and work plan
- 2.4 Select and prepare tools and equipment compatible with the work plan, risk assessment and Company procedures
- 2.5 Check the 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
- 2.8 Identify specific Distribution Network Operator panel/cabinet wiring configuration to ensure correct terminations can be made at the meter.
- 2.9 Verify the CT ratio in accordance with existing site kVA capacity.

Outcome 3: Carry out LV CT Meter change

- 3.1 Change LV CT Metering equipment using selected tools and equipment, in line with the work plan, risk assessment and company procedures on **three** different occasions, **one** of which must be a meter with communication method.
- 3.2 Carry out modifications or re-wire the secondary wiring on at least **two** occasions
- 3.3 Configure the metering equipment by using **all** of the following
 - a) programming equipment on-site on at least **one** occasion
 - b) communications methods from a remote location on at least **one** occasion
 - c) commission metering equipment on at least **one** occasion using manual methods to demonstrate knowledge of formulaic calculations.
- 3.4 Carry out appropriate tests both before and on completion of the finished installation for compliance with the specification and to ensure that the installation is functioning correctly
- 3.5 Record and report the meter change work and test results in accordance with Company procedures
- 3.6 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems: *commissioning, communications, defects, supply, earthing*
- 3.7 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,
- 3.8 Complete all required post activity documentation in line with company policy
- 3.9 Ensure all tools and equipment are stored in line with company procedures
- 3.10 Ensure hazardous and non hazardous waste materials are dealt with and disposed of in accordance with Company and statutory procedures
- 3.11 Ensure the work area is left in a safe condition compatible with company procedures

Knowledge and Understanding

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 4: General

- 4.1 The main principles of health and safety and environmental legislation and regulations
- 4.2 The reporting lines and authorisation roles and responsibilities
- 4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

- 5.1 The company procedures and processes for reporting problems with tools and equipment
- 5.2 How to read and interpret the, procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
- 5.3 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
- 5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
- 5.5 What personal protective equipment needs to worn when undertaken work activities
- 5.6 What materials and substances are dangerous and hazardous to health
- 5.7 How to maintain safe working and environmental practices throughout the duration of the work
- 5.8 How to minimise risks to self and others when undertaking work activities
- 5.9 The procedures and documentation used for reporting problems
- 5.10 Company work instruction, information and reporting systems and documentation
- 5.11 How to respond to the different types and categories of emergency situations that might occur
- 5.12 How to replace plant and apparatus using specified principles, methods, processes and procedures
- 5.13 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 110

Install LV CT Meter (D/600/4019) 21 credits

This unit is about installing low voltage current transformer meters in an electricity power utility environment. It involve completing installation activities in a rigorous and methodical manner and the following of processes and procedures to make sure that the finishes work meets the quality assurance and operating specifications set by the organisation.

By completing this unit, you show you are competent to:

- Plan to install LV CT metering equipment
- Prepare to install LV CT metering equipment
- Install LV CT metering equipment
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 1: Plan for work activities to install LV CT metering equipment

- 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 to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel
- 1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare resources to install LV CT meter

- 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 appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and Company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards, contamination protection)
- 2.3 Identify the correct meter and associated equipment to be worked on, in line with company procedures and work plan
- 2.4 Select and prepare tools and equipment compatible with the work plan, risk assessment and Company procedures
- 2.5 Check the 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
- 2.8 Identify specific Distribution Network Operator panel/cabinet wiring configuration to ensure correct terminations can be made at the meter.
- 2.9 Calculate from declared kVA the CT primary value to ensure correct resource is identified.

Outcome 3: Carry out the installation of a LV CT meter

- 3.1 Install LV CT Metering equipment using selected tools and equipment, in line with the work plan, risk assessment and company procedures on **three** different occasions
- 3.2 Configure the metering equipment by using **all** of the following
 - a) programming equipment on-site on at least **one** occasion
 - b) communications methods from a remote location on at least **one** occasion
 - c) commission metering equipment on at least **one** occasion using manual methods to demonstrate knowledge of formulaic calculations.
- 3.3 Carry out appropriate tests both before and on completion of the finished installation for compliance with the specification and to ensure that the installation is functioning correctly
- 3.4 Record and report the meter change work and test results in accordance with Company procedures
- 3.5 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
commissioning, communications, defects, supply, earthing
- 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 procedures
- 3.9 Ensure hazardous and non hazardous waste materials 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

Knowledge and Understanding

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 4: General

- 4.1 The main principles of health and safety and environmental legislation and regulations
- 4.2 The company reporting lines and authorisation roles and responsibilities
- 4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

- 5.1 The company procedures and processes for reporting problems with tools and equipment
- 5.2 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 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
- 5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
- 5.5 What personal protective equipment needs to worn when undertaken work activities
- 5.6 What materials and substances are dangerous and hazardous to health
- 5.7 How to maintain safe working and environmental practices throughout the duration of the work
- 5.8 How to minimise risks to self and others when undertaking work activities
- 5.9 Company work instruction, information and reporting systems and documentation
- 5.10 How to respond to the different types and categories of emergency situations that might occur
- 5.11 How to install plant and apparatus using specified principles, methods, processes and procedures
- 5.12 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 111 **Change HV VT/CT Metering Equipment on a Remote Panel (Y/600/4021)**

15 credits

This unit is about changing metering equipment on a remote panel 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 to:

- Plan to change HV VT/CT Meters
- Prepare to change HV VT/CT Meters
- Change HV VT/CT Meters
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 1: Plan for work activities to change HV VT/CT Meters

- 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 to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel
- 1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare resources to change a HV VT/CT Meter

- 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 appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and Company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards, contamination protection)
- 2.3 Identify the correct meter and associated equipment to be worked on, in line with company procedures and work plan
- 2.4 Select and prepare tools and equipment compatible with the work plan, risk assessment and Company procedures
- 2.5 Check the 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
- 2.8 Identify specific Distribution Network Operator panel/cabinet wiring configuration to ensure correct terminations can be made at the meter.
- 2.9 Verify the VT/CT ratios in accordance with existing pre installed equipment

Outcome 3: Carry out the change of HV VT/CT metering equipment on a remote panel

- 3.1 Change HV VT/CT Metering equipment using selected tools and equipment, in line with the work plan, risk assessment and company procedures on **three** different installations, of which **one** must be a Code 3 and **one** must be a Code 5 installation
- 3.2 Carry out modifications, or re-wire the secondary wiring on at least **one** occasion
- 3.3 Configure the metering equipment by using **all of the following**
 - a) programming equipment on-site on at least **one** occasion
 - b) communications methods from a remote location on at least **one** occasion
 - c) commission metering equipment on at least **one** occasion using manual methods to demonstrate knowledge of formulaic calculations.
- 3.4 Carry out appropriate tests both before and on completion of the finished installation for compliance with the specification and to ensure that the installation is functioning correctly
- 3.5 Record and report the meter change work and test results in accordance with Company procedures
- 3.6 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
commissioning, communications, defects, supply
- 3.7 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,
- 3.8 Complete all required post activity documentation in line with company policy
- 3.9 Ensure all tools and equipment are stored in line with company procedures
- 3.10 Ensure hazardous and non hazardous waste materials are dealt with and disposed of in accordance with Company and statutory procedures
- 3.11 Ensure the work area is left in a safe condition compatible with company procedures

Knowledge and Understanding

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 4: General

- 4.1 The main principles of health and safety and environmental legislation and regulations
- 4.2 The reporting lines and authorisation roles and responsibilities
- 4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

- 5.1 The company procedures and processes for reporting problems with tools and equipment
- 5.2 How to read and interpret the, procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
- 5.3 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
- 5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
- 5.5 What personal protective equipment needs to worn when undertaken work activities
- 5.6 What materials and substances are dangerous and hazardous to health
- 5.7 How to maintain safe working and environmental practices throughout the duration of the work
- 5.8 How to minimise risks to self and others when undertaking work activities
- 5.9 The procedures and documentation used for reporting problems
- 5.10 Company work instruction, information and reporting systems and documentation
- 5.11 How to respond to the different types and categories of emergency situations that might occur
- 5.12 How to replace plant and apparatus using specified principles, methods, processes and procedures
- 5.13 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 112

Install HV VT/CT Meter on Remote Panel (H/600/4023) 15 credits

This unit is about installing HV VT/CT meters on remote panels 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 you are competent to:

- Plan to install HV VT/CT Meters to remote panels
- Prepare to install HV VT/CT Meters to remote panels
- Install HV VT/CT Meters to remote panels
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 1: Plan for work activities to install HV VT/CT Meters to remote panels

- 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 to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel
- 1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Prepare resources to install HV VT/CT Meters to remote panels

- 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 appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and Company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards, contamination protection)
- 2.3 Identify the correct meter and associated equipment to be worked on, in line with company procedures and work plan
- 2.4 Select and prepare tools and equipment compatible with the work plan, risk assessment and Company procedures
- 2.5 Check the 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
- 2.8 Identify specific Distribution Network Operator panel/cabinet wiring configuration to ensure correct terminations can be made at the meter.
- 2.9 Verify the VT/CT ratios in accordance with existing pre installed equipment.

Outcome 3: Carry out the installation of HV VT/CT metering equipment on a remote panel

- 3.1 Install HV VT/CT Metering equipment using selected tools and equipment, in line with the work plan, risk assessment and company procedures on **three** different occasions, of which **one** must be a Code 3 and **one** a Code 5 installation
- 3.2 Configure the metering equipment by using **all of the following**
 - a) programming equipment on-site on at least **one** occasion
 - b) communications methods from a remote location on at least **one** occasion
 - c) commission metering equipment on at least **one** occasion using manual methods to demonstrate knowledge of formulaic calculations.
- 3.3 Test the finished installation for compliance with the specification and to ensure that the installation is functioning/recording correctly
- 3.4 Record and report the meter installation work and test results in accordance with Company procedures
- 3.5 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following problems:
commissioning, communications, defects, supply
- 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 procedures
- 3.9 Ensure hazardous and non hazardous waste materials 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

Knowledge and Understanding

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 4: General

- 4.1 The main principles of health and safety and environmental legislation and regulations
- 4.2 The company reporting lines and authorisation roles and responsibilities
- 4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

- 5.1 The company procedures and processes for reporting problems with tools and equipment
- 5.2 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 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
- 5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
- 5.5 What personal protective equipment needs to worn when undertaken work activities
- 5.6 What materials and substances are dangerous and hazardous to health
- 5.7 How to maintain safe working and environmental practices throughout the duration of the work
- 5.8 How to minimise risks to self and others when undertaking work activities
- 5.9 Company work instruction, information and reporting systems and documentation
- 5.10 How to respond to the different types and categories of emergency situations that might occur
- 5.11 How to install plant and apparatus using specified principles, methods, processes and procedures
- 5.12 How to recognise and report inaccurate and incorrect work instructions and documentation

Unit 113

Install HV VT/CT Metering Systems up to Test Terminal Block (M/600/4025) 17 credits

This unit is about installing HV VT/CT metering systems up to test terminal block 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 to:

- Plan to install HV VT/CT Metering System
- Prepare to install HV VT/CT Metering System
- Install HV VT/CT Metering System
- Use and communicate data and information
- Resolve problems effectively and efficiently

Performance Criteria

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 1: Plan for work to Install HV VT/CT Metering System

- 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 to comply with company procedures in line with risk assessment, taking into account factors such as location, content and sequence of tasks, personnel
- 1.4 Inform all affected parties of their intended work plan, in line with company procedures

Outcome 2: Organise resources to Install HV VT/CT Metering System

- 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 appropriate control measures to ensure the work area is in a safe and suitable condition for work to commence in line with risk assessment requirements and Company procedures (e.g. signs/barriers, demarcation of work area, control/removal of hazards, contamination protection)
- 2.3 Identify the correct meter and associated equipment to be worked on, in line with company procedures and work plan
- 2.4 Select and prepare tools and equipment compatible with the work plan, risk assessment and Company procedures
- 2.5 Check the 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

Outcome 3: Installation of HV VT/CT Metering System

- 3.1 Install metering equipment using selected tools and equipment, in line with the work plan, risk assessment and company procedures on **two** occasions
- 3.2 Carry out appropriate testing procedures on completed installations, in line with company procedures
- 3.3 Check the completed installation meets and complies with the work instructions and equipment specifications
- 3.4 Report and record results in line with Company procedures
- 3.5 Deal with all problems encountered safely and efficiently, referring matters which cannot be rectified to the appropriate person; evidence to include **one** of the following:
 - a) *Equipment/material*
 - b) *Test failure*
 - c) *System conditions*
 - d) *Environmental conditions*
 - e) *Effects of other people*
- 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 procedures
- 3.9 Ensure hazardous and non hazardous waste materials 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

Knowledge and Understanding

To perform effectively in this unit, you need to have evidence in the following areas

Outcome 4: General

- 4.1 The main principles of health and safety and environmental legislation and regulations
- 4.2 The reporting lines and authorisation roles and responsibilities
- 4.3 The company policies and procedures that directly impact on the work to be undertaken

Outcome 5: Work area

- 5.1 The company procedures and processes for reporting problems with tools and equipment
- 5.2 How to read and interpret the, procedures and information sources used to make sure that tools and equipment are fit for purpose and safe to use
- 5.3 Processes and procedures to be followed for inspecting and preparing tools and equipment prior to use
- 5.4 Read and interpret instructions on how to use tools and equipment safely and the processes and requirements for undertaking routine checks
- 5.5 What personal protective equipment needs to worn when undertaken work activities
- 5.6 What materials and substances are dangerous and hazardous to health
- 5.7 How to maintain safe working and environmental practices throughout the duration of the work
- 5.8 How to minimise risks to self and others when undertaking work activities
- 5.9 The procedures and documentation used for reporting problems
- 5.10 Company work instruction, information and reporting systems and documentation
- 5.11 How to respond to the different types and categories of emergency situations that might occur
- 5.12 How to replace plant and apparatus using specified principles, methods, processes and procedures
- 5.13 How to recognise and report inaccurate and incorrect work instructions and documentation

Useful contacts

Type	Contact	Query
UK learners	T: +44 (0)20 7294 2800 E: learnersupport@cityandguilds.com	<ul style="list-style-type: none"> • General qualification information
International learners	T: +44 (0)20 7294 2885 F: +44 (0)20 7294 2413 E: intcg@cityandguilds.com	<ul style="list-style-type: none"> • General qualification information
Centres	T: +44 (0)20 7294 2787 F: +44 (0)20 7294 2413 E: centresupport@cityandguilds.com	<ul style="list-style-type: none"> • Exam entries • Registrations/enrolment • Certificates • Invoices • Missing or late exam materials • Nominal roll reports • Results
Single subject qualifications	T: +44 (0)20 7294 8080 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: singlesubjects@cityandguilds.com	<ul style="list-style-type: none"> • Exam entries • Results • Certification • Missing or late exam materials • Incorrect exam papers • Forms request (BB, results entry) • Exam date and time change
International awards	T: +44 (0)20 7294 2885 F: +44 (0)20 7294 2413 E: intops@cityandguilds.com	<ul style="list-style-type: none"> • Results • Entries • Enrolments • Invoices • Missing or late exam materials • Nominal roll reports
Walled Garden	T: +44 (0)20 7294 2840 F: +44 (0)20 7294 2405 E: walledgarden@cityandguilds.com	<ul style="list-style-type: none"> • Re-issue of password or username • Technical problems • Entries • Results • GOLLA • Navigation • User/menu option problems
Employer	T: +44 (0)121 503 8993 E: business_unit@cityandguilds.com	<ul style="list-style-type: none"> • Employer solutions • Mapping • Accreditation • Development Skills • Consultancy
Publications	T: +44 (0)20 7294 2850 F: +44 (0)20 7294 3387	<ul style="list-style-type: none"> • Logbooks • Centre documents • Forms • Free literature

If you have a complaint, or any suggestions for improvement about any of the services that City & Guilds provides, email: feedbackandcomplaints@cityandguilds.com

Published by City & Guilds
1 Giltspur Street
London
EC1A 9DD
T +44 (0)20 7294 2800
F +44 (0)20 7294 2400
www.cityandguilds.com

**A company registered in England
and Wales (company number
16513878)**