

Level 3 Award in the Initial Verification and Certification of Electrical Installations (2394)

September 2017 Version 1.5



Qualification at a glance

Subject area	Electrical
City & Guilds number	2394
Age group approved	18+
Assessment	Multiple choice test, written test, assignment.
Fast track	Automatic approval applies in certain cases.
Support materials	Centre handbook Assessment pack
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	GLH	TQT	City & Guilds number	Accreditation number
Level 3 Award in the Initial Verification and Certification of Electrical Installations	36	50	2394-01	600/3785/4

Document version no.	Amendment	Section
1.2	Test duration for 2394-301 is 1 hour and 20 minutes	Section 4 Assessment Test specifications
1.3	Age restriction changed to 18+	Qualifications at a glance Age restriction section
1.4	Updated information on 502 assessment	Pg. 8 & Pg. 9
1.5	Added TQT and GLH details Deleted QCF	Qualification at a Glance, Structure Appendix 1



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1 Introduction

This document tells you what you need to do to deliver the qualification:

Area	Description
Who is the qualification for?	It is for aimed at practising electricians who have not carried out inspection and testing since qualifying or who require some update of training before going on to other City & Guilds qualifications. The qualification is also suitable for those with limited experience of initial inspection of electrical installations, such as those entering the industry from other engineering disciplines or who have been working in allied trades.
What does the qualification cover?	This qualification prepares candidates for the initial verification of electrical installation work.
Who did we develop the qualification with?	The qualifications are endorsed by SummitSkills the Sector Skills Council for the building services engineering sector.
What opportunities for progression are there?	It allows candidates to progress into employment or to the following City & Guilds qualifications: <ul style="list-style-type: none">• Level 3 Award in Periodic Inspection, Testing and Certification of Electrical Installations (2395)• Level 4 Award in the Design and Verification of Electrical Installations (2396)• ILM management and leadership qualifications

Structure

To achieve the **Level 3 Award in Initial Verification and Certification of Electrical Installations**, learners must achieve **5** credits from the mandatory units.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value
Mandatory			
D/503/5258	Unit 301	Principles, practices and legislation for the initial verification of electrical installations (Online Multiple Choice)	5
	Unit 302	Principles, practices and legislation for the initial verification of electrical installations (Written)	
	Unit 303	Principles, practices and legislation for the initial verification of electrical installations (Assignment)	

Total Qualification Time

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a Learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and assessment.

Title and level	GLH	TQT
City & Guilds Level 3 Award In the Initial Verification and Certification of Electrical Installations	36	50



2 Centre requirements

Approval

If your Centre is approved to offer the qualification Level 2 Certificate in Fundamental Inspection, Testing and initial Verification (2392-08) you will receive automatic approval to offer the new Level 3 Award in Initial Verification and Certification of Electrical Installations (2394-01).

To offer this qualification, new centres will need to gain both centre and qualification approval. Please refer to the *Centre Manual - Supporting Customer Excellence* for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Resource requirements

Physical resources and site agreements

Centres must provide access to sufficient equipment in the centre or workplace to ensure candidates have the opportunity to cover all of the practical activities.

The Assignment guide gives details on the specifications of any practical rig which must be built.

Centre staffing

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be technically competent in the area for which they are delivering training and/or should have experience of providing training.
- have recent relevant experience in the specific area they will be assessing

Centre staff may undertake more than one role, eg tutor and assessor or internal verifier, but cannot internally verify their own assessments.

Assessors and internal verifiers

Assessor/Verifier (A/V) units are valued as qualifications for centre staff, but they are not currently a requirement for the qualifications.

Continuing professional development (CPD)

Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice, and that it takes account of any national or legislative developments.

Candidate entry requirements

Candidates should not already be entered for a qualification of the same type, content and level as that of a qualification they already hold.

There are no formal entry requirements for candidates undertaking this qualification. However, centres must ensure that candidates have the potential and opportunity to successfully gain the qualification. It would be expected that candidates have a basic knowledge and understanding of electrical science and principles and experience of electrical installation work either within the electrical contracting industry or an allied trade.

Age restrictions

City & Guilds cannot accept any registrations for candidates under 18 as this qualification is not approved for under 18s.



3 Delivering the qualification

Initial assessment and induction

An initial assessment of each candidate should be made before the start of their programme to identify:

- if the candidate has any specific training needs,
- support and guidance they may need when working towards their qualification.
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the candidate fully understands the requirements of the qualification, their responsibilities as a candidate, and the responsibilities of the centre. This information can be recorded on a learning contract.

Support materials

The following resources are available for this qualification:

Description	How to access
Short answer sample tests	www.cityandguilds.com
Assignment guide for centres	www.cityandguilds.com
SmartScreen	www.smartscreen.co.uk



4 Assessment

Assessment of the qualification

Candidates must successfully complete:

- one online multiple choice test.
- one dated written test **or** one on-demand, on-line short answer test.
- one assignment.

City & Guilds has written the following assessments to use with this qualification:

Unit	Title	Assessment method	Where to obtain assessment materials
301	Principles, practices and legislation for the initial verification of electrical installations (Online multiple choice)	City & Guilds GOLLA/ e-volve multiple choice test *(This test is the same test as 2395-301)	Examinations provided on GOLLA/e-volve.
302/ 502	Principles, practices and legislation for the initial verification of electrical installations (Written test)	City & Guilds written test It is set and marked by City & Guilds. Or City & Guilds e-volve short answer questions	The Written test is available from the City & Guilds website.
303	Principles, practices and legislation for the initial verification of electrical installations (Assignment)	Assignment It is set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure it is properly carried out.	The Assignment is available from the City & Guilds website.

Test specifications

The way the knowledge is covered by each test is laid out in the table below:

Test 1: Unit 301 (Online Multiple Choice)

Duration: 1 hour 20 minutes

Unit	Outcome	Number of questions	%
301	1 Understand the requirements for completing the safe isolation of electrical circuits and installations	7	18
	2 Understand the requirements for initial verification of electrical installations	2	5
	4 Understand the requirements for the safe testing and commissioning of electrical installations	11	27
	5 Understand the requirements for testing before circuits are energised	7	18
	6 Understand the requirements for testing energised installations	13	32
	Total	40	100

Recognition of prior learning (RPL)

Recognition of prior learning means using a person's previous experience or qualifications which have already been achieved to contribute to a new qualification.

RPL is allowed and is also sector specific.



5 Units

Availability of units

The following units can also be obtained from The Register of Regulated Qualifications: <http://register.ofqual.gov.uk/Unit>

Structure of units

These units each have the following:

- City & Guilds reference number
- unit accreditation number (UAN)
- title
- level
- credit value
- unit aim
- relationship to NOS, other qualifications and frameworks
- endorsement by a sector or other appropriate body
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria

Unit 301/2/3 Principles, practices and legislation for the initial verification of electrical installations

UAN:	D/503/5258
Level:	3
Credit value:	5
GLH:	36
Relationship to NOS:	Learners achieving the outcomes of this unit will have demonstrated that they are competent in accordance with the National Occupational Standards (NOS) for the Electrotechnical Industry ELT24, 25 and 26.
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills.
Aim:	This unit is designed to enable learners to understand principles, practices and legislation for the initial verification of electrical installations with statutory and non-statutory regulations and requirements. Its content is the knowledge needed by a learner to underpin the application of skills for the inspection, testing, commissioning and certification of electrical installations.

Learning outcome
The learner will: 1. understand the requirements for completing the safe isolation of electrical circuits and installations
Assessment criteria
The learner can: 1.1 state the requirements of the Electricity at Work Regulations for the safe inspection of electrical systems and equipment 1.2 specify the appropriate procedure for completing safe isolation 1.3 state the reasons for carrying out safe isolation 1.4 state the implications of carrying out safe isolation 1.5 state the implications of not carrying out safe isolation 1.6 identify the Health and Safety requirements which apply when inspecting, testing and commissioning electrical installations and circuits

Learning outcome
The learner will: 2. understand the requirements for initial verification of electrical installations
Assessment criteria
The learner can: 2.1 state the purpose of the Initial Verification of electrical installations 2.2 state the requirements of the initial verification 2.3 identify the relevant documents associated with the inspection, testing and commissioning of an electrical installation 2.4 specify the information that is required by the inspector to conduct the initial verification of an electrical installation

Learning outcome
The learner will: 3. understand the requirements for completing the inspection of electrical installations prior to their being placed into service
Assessment criteria
The learner can: 3.1 select appropriate items to be checked during the inspection process 3.2 identify human senses appropriate for initial verification 3.3 state how the senses can be used during the inspection process 3.4 specify the requirements for the inspection of electrical installations 3.5 specify the requirements for the inspection to include: <ul style="list-style-type: none"> • special installations and locations as identified in Part 7 of BS 7671 • IP Classification of equipment

Learning outcome
The learner will: 4. understand the requirements for the safe testing and commissioning of electrical installations
Assessment criteria
The learner can: 4.1 state the tests to be carried out on an electrical installation in accordance with the BS 7671 and IET Guidance Note 3 4.2 identify the appropriate instrument for each test to be carried out in terms of: <ul style="list-style-type: none"> • The instrument is fit for purpose • Identifying the correct scale or setting 4.3 specify the requirements for the safe use of instruments to be used for testing and commissioning, to include: <ul style="list-style-type: none"> • Checks required to prove that test instruments are safe and functioning correctly • The requirements for test leads and probes must comply with HSE Guidance GS38 • The need for instruments to be regularly checked and calibrated 4.4 explain why it is necessary for test results to comply with standard values 4.5 state the actions to be taken in the event of unsatisfactory results being obtained 4.6 explain why testing is carried out in the sequence specified in BS 7671 and IET Guidance Note 3

Learning outcome
The learner will: 5. understand the requirements for testing before circuits are energised
Assessment criteria
The learner can: 5.1 state why it is necessary to verify continuity to include: <ul style="list-style-type: none"> • Protective bonding conductors • Circuit protective conductors • Ring final circuit conductors 5.2 state the methods for verifying continuity to include: <ul style="list-style-type: none"> • Protective conductors • Ring final circuit conductors 5.3 explain factors that effect conductor resistance values 5.4 specify the procedures for completing insulation resistance testing 5.5 state the effects on insulation resistance values that the following can have <ul style="list-style-type: none"> • cables connected in parallel • variations in cable length 5.6 explain why it is necessary to verify polarity 5.7 state the procedures for verifying polarity

Learning outcome
The learner will: 6. understand the requirements for testing energised installations
Assessment criteria
The learner can: 6.1 state the procedures for confirming polarity of the incoming supply 6.2 specify the methods for measuring earth electrode resistance to include: <ul style="list-style-type: none"> • installations forming part of a TT system • generators and transformers 6.3 describe common earth fault loop paths 6.4 state the methods for verifying protection by automatic disconnection of supply 6.5 identify the requirements for the measurement of prospective fault current 6.6 specify the methods for determining prospective fault current 6.7 verify the suitability of protective devices for prospective fault currents 6.8 specify the methods for testing the correct operation of residual current devices 6.9 state the reasons for verifying phase sequence 6.10 state the methods used to verify phase sequence 6.11 state the need for functional testing 6.12 identify items which require functional testing 6.13 state the appropriate procedures for dealing with clients during the commissioning and certification process

Learning outcome
The learner will: 7. understand the requirements for the completion of electrical installation certificates and associated documentation
Assessment criteria
The learner can: 7.1 explain the purpose of certification and associated documentation 7.2 state the information that must be contained on initial verification documentation 7.3 describe the certification process for a completed installation 7.4 identify the responsibilities of different relevant personnel in relation to the completion of the certification process 7.5 explain the requirements for the recording and retention of completed initial verification documentation in accordance with the BS 7671

Learning outcome
The learner will: 8. be able to confirm safety of system and equipment prior to completion of inspection, testing and commissioning
Assessment criteria
The learner can: 8.1 carry out safe isolation procedures in accordance with regulatory requirements 8.2 comply with the health and safety requirements of themselves and others within the work location during the initial verifications process 8.3 check the safety of electrical systems prior to the commencement of inspection, testing and commissioning

Learning outcome
The learner will: 9. be able to carry out inspection of electrical installations prior to them being placed into service
Assessment criteria
The learner can: 9.1 identify a safe system of work appropriate to the work activity 9.2 carry out an initial inspection of an electrical installation in accordance with the requirements of BS 7671 and IET Guidance Note 3 9.3 complete a Schedule of Inspections in accordance with BS 7671 and IET Guidance Note 3

Learning outcome
The learner will: 10. be able to test electrical installations prior to them being placed into service
Assessment criteria
The learner can: 10.1 select the test instruments and their accessories for tests to include: <ul style="list-style-type: none"> • continuity • insulation resistance • polarity • earth electrode resistance • earth fault loop impedance • prospective fault current • RCD operation • phase sequence • functional testing

10.2 carry out tests in accordance with BS 7671 and Guidance notes 3 to include:

- continuity including
 - main protective bonding conductors
 - circuit protective conductors
 - Ring Final Circuits
- insulation resistance
- polarity
- external earth fault loop impedance (Z_e)
- system earth fault loop impedance (Z_s)
- prospective fault current
- RCD operation including additional protection
- phase sequence
- functional testing

10.3 confirm compliance by verifying test results

10.4 complete appropriate documentation in accordance with the BS 7671 and IET Guidance Note 3 including:

- Electrical Installation Certificate
- Schedule of Inspections
- Schedule of Test results

Learning outcome
The learner will: 11. be able to commission electrotechnical systems and equipment
Assessment criteria
The learner can: 11.1 clarify the commissioning procedures with relevant persons 11.2 carry out the commissioning of circuits, accessories and equipment to confirm functionality

Range

requirements

In terms of:

- those carrying out the work
- those using the premises during the inspection

procedure

Carrying out safe working practices:

- Identification of circuit(s) to be isolated
- Identifying suitable points of isolation
- Selecting correct test and proving instruments in accordance with relevant industry guidance and standards
- Suitable testing methods
- Selecting locking devices for securing isolation
- Warning notices
- Appropriate sequence for isolating circuits

reasons

In relation to:

- The inspector
- Other personnel
- Customers/clients
- Public
- Building systems

implications

In relation to:

- The inspector
- Other personnel
- Customers/clients
- Public
- Building systems (removal of supply)

Health and Safety requirements

- Working in accordance with risk assessments / permits to work / method statements
- Safe use of tools and equipment
- Safe and correct use of measuring instruments
- Provision and use of PPE
- Reporting of unsafe situations

relevant documents

Electricity at Work Regulations

- BS 7671
- IET Guidance Note 3
- HSE Guidance

requirements for the inspection

- Earthing conductors
- Earth electrodes
- Circuit protective conductors
- Main and supplementary protective bonding conductors
- Devices for isolation and switching
- Type and rating of overcurrent protective devices
- Type and rating of RCDs and RCBOs
- Barriers and Enclosures
- Containment systems (Steel and Plastic)
- Cables
- Conductors and terminations
- Electrical accessories

factors that affect conductor resistance values

- Cables connected in parallel
- Variations in cable length
- Variations in conductor cross sectional area

procedures

- Precautions to be taken before conducting insulation resistance tests
- Methods of testing insulation resistance
- The required test voltages and minimum insulation resistance values for circuits operating at various voltages
- Identifying typical voltage sensitive devices
- Particular requirements for testing where there are voltage sensitive devices and/or surge protection devices installed

common earth fault loop paths

- TT
- TN-S
- TN-C-S

methods for verifying protection

- The measurement of the external earth fault loop impedance (Z_e) and the system earth fault loop
- Impedance (Z_s)
- Establishing Z_e by enquiry
- Calculation of the value of Z_s from given information
- Comparing measured Z_s values with the maximum tabulated figures as specified in BS 7671 including the application of the correction factor

requirements for determining fault current

- Single phase installations
- Three phase installations

procedures for dealing with clients

- Ensuring the safety of others during the work activities
- Keeping clients informed during the process
- Labelling electrical circuits, systems and equipment that are still to be commissioned
- Providing clients with all the appropriate documentation upon work completion

documentation

- An Electrical Installation Certificate
- A Minor Electrical Installation Works Certificate
- Schedule of Inspections
- Schedule of Test results



Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on www.cityandguilds.com.

Centre Manual - Supporting Customer Excellence contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

Our Quality Assurance Requirements encompasses all of the relevant requirements of key regulatory documents such as:

- Regulatory Arrangements for the Qualifications and Credit Framework (2008)
- SQA Awarding Body Criteria (2007)
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

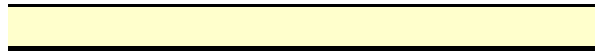
The **centre homepage** section of the City & Guilds website also contains useful information such on such things as:

- **Walled Garden:** how to register and certificate candidates on line
- **Events:** dates and information on the latest Centre events
- **Online assessment:** how to register for e-assessments.

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Useful contacts

UK learners General qualification information	T: +44 (0)844 543 0033 E: learnersupport@cityandguilds.com
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