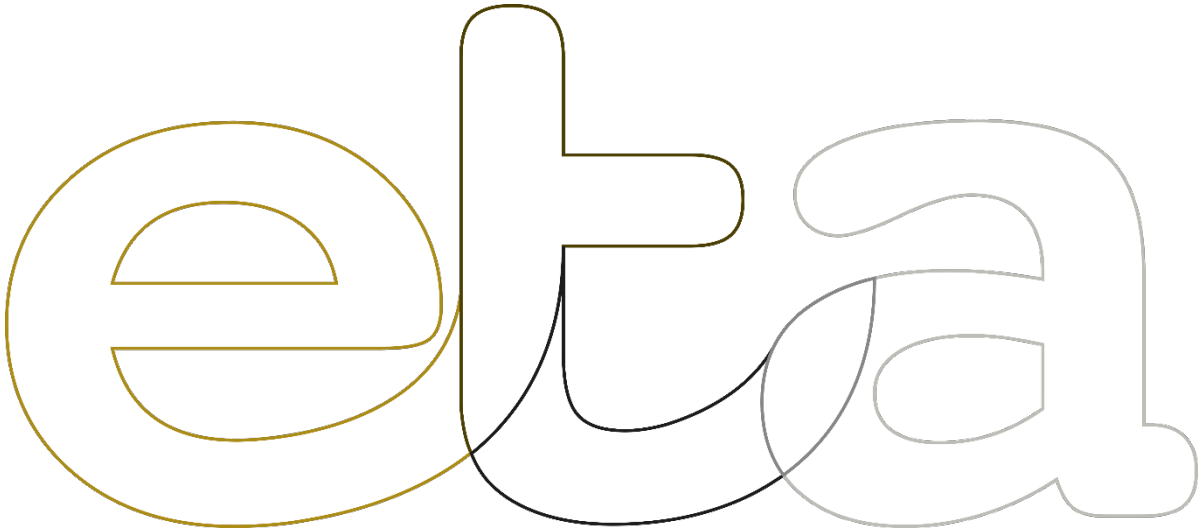


Level 3 Award in Residential, Commercial and Industrial Electric Vehicle Charging Equipment Installation
603/7636/3

Introduction

ETA qualifications are developed in conjunction with the industries and employers they service. They are designed to add value and deliver multidimensional outputs that provide impact for both learners and employers.

It is therefore important that the assessment requirements of ETA qualifications are robust whilst not containing unnecessary and over-burdensome challenges that detract from the intended outcomes and impact. These assessment principles are prepared with that in mind and are applicable to the *Electrical Vehicle Installation* qualification:
Level 3 Award In Residential, Commercial and Industrial Electric Vehicle Charging Equipment Installation

Entry Requirements

This course is intended for practicing electricians as part of the assessment for this qualification, learners must hold one of the following:

- *Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment)*
- *Level 3 NVQ Diploma in Electrotechnical Services (Electrical Maintenance)*
- *Level 3 Electrotechnical qualification*
- *Level 3 NVQ in Electrotechnical Services Experienced Worker*
- *Level 3 Electrotechnical Experienced Worker Qualification*
- *Equivalent historical qualifications (see EAS Table 4B/4C) https://electrical.theiet.org/media/2762/eas-21_482-rev-b-eas-qualifications-guide-december-2021.pdf*
- *ECS Gold Card, JIB Electrician or Approved Electrician Card*

The qualifications above must have been achieved no more than 5 years prior to starting this qualification or there must be evidence the candidate has remained current by completing relevant Level 3 Award in the Requirements for Electrical Installations BS 7671:2018 or equivalent.

Principles

There are four key principles to underpin assessment delivery:

1. Assessment should contribute to developing a learners' knowledge and/or skills and provide relevant and current development the related industry requires.

2. Systems for capturing evidence of competence should be integrated and efficient. Assessment practices for both competence-based and knowledge-based aspects of qualifications should, where possible, be integrated with industry driven standards and requirements.

3. Assessment methods must be appropriate for the level and nature of the qualification units to be assessed. Methods of assessing achievement against learning outcomes and assessment principles must be accommodating and flexible, whilst remaining appropriate for both the level being assessed and industry expectations of learners at that level.

4. Evidence of knowledge and understanding must be recorded and be clearly attributable to the learner. This can be delivered using task-based activity with questions and answer sessions, supported by assessor observation.

The choice and application of assessment methods must be consistent with these principles and will generally include:

- Direct Observation
- Written evidence (portfolio/workbook)
- Centre set assignment
- Centre set coursework
- Oral examination
- Professional/open discussion

Delivery Team Requirements

Tutors / Assessors

- Tutors / Assessors should have an detailed knowledge of, and be competent in, the occupational requirements of the units
- Tutors / Assessors should hold or be working towards the related professional qualifications for delivery and assessment as required
- This competence will have been acquired either in direct employment in the occupational role to which the unit relates, or in employment as a manager, supervisor or in-house trainer of employees carrying out the role
- It is unlikely that occupational competence will have been achieved in less than twelve months of employment but individuals with less experience could be considered as assessors if sufficiently occupationally competent

- Assessor qualifications, Minimum Level 3 Electrical qualifications, Electrical installation industry knowledge and experience, ongoing CPD.

Internal Quality Assurers (IQAs)

- IQAs must have a thorough understanding of the structure, content and occupational requirements of the units that they are internally quality assuring. This understanding will have been acquired while either working directly within or delivering within the relevant occupational area in either an operational or a support function
- The level of understanding must be sufficient to allow the IQA to judge whether the assessor has fully assessed learners against all the principles within the unit
- It is unlikely that a person could have gained this level of understanding in less than twelve months of being employed but individuals with less experience could be considered as IQAs if they have the required level of experience, knowledge and understanding
- IQA qualifications, Electrical qualifications or CPD indicating knowledge and understanding of the qualification and process.

Technical / Expert Witness

Expert witnesses can be drawn from a wide range of people who can observe, 'measure and examine performance against the industry and qualification principles. These can include; line managers and experienced individuals within a related sector-based organisation.

The Technical Expert Witnesses should have proven practical experience and knowledge relating to the content of the principles being assessed.

It is unlikely that someone could become an expert in their entire job role in less than twelve months of being employed in their industry. They could, however, very quickly become an expert in the content of a single unit if this was the focus of their job role. The assessor should make a judgement as to the level of expertise held by a potential Technical Expert Witness and, where necessary, this should be confirmed with the awarding organisation.

Assessment Materials

ETC Awards Ltd. (ETA) Assessment Materials are protected by copyright and are supplied only to Approved Centres for use solely for the purpose of the assessment of ETA learners.

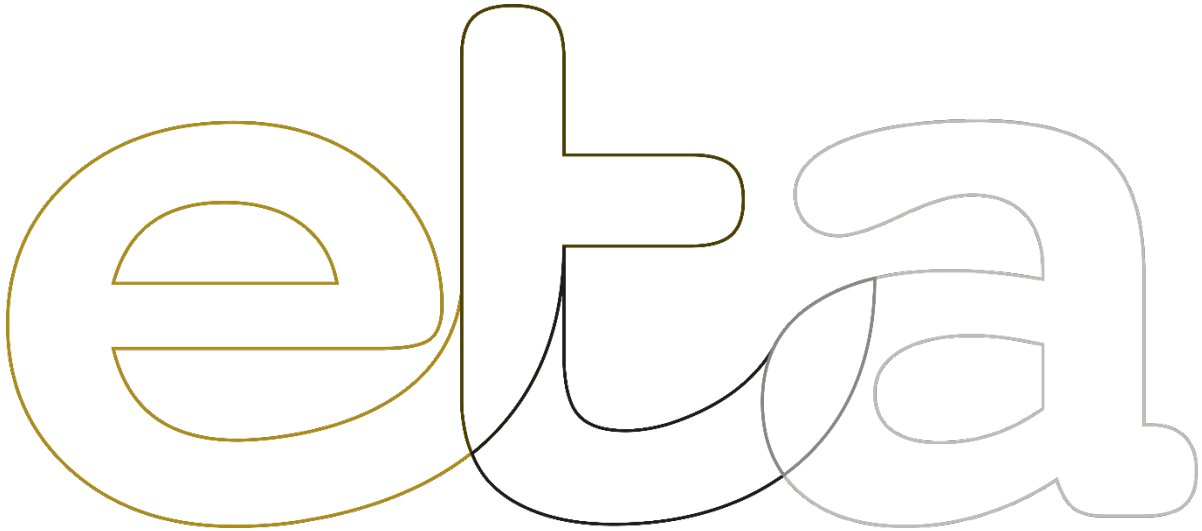
Instructions for Conducting Assessment

the Approved Centre must either:

- Secure approval of in house assessment material by ETA's External Quality Assurance team prior to use
- Use ETA Assessment Materials
- We recognise that reasonable adjustments may be considered at the time of assessment, please refer to the ETA Reasonable adjustments and considerations policy

All approved centres must then handle and store securely all Assessment Materials in accordance with the following:

- Assessment Material must be accessible to learners only during their programme
- The Approved Centre must not make public in any format the contents of any materials either in part or in full.
- Materials must be securely handled and under no circumstances shared with third party organisations or individuals
- The Approved Centre must seek permission from ETA through the External Quality Assurance team if they want to convert Material for alternative storage, retrieval and delivery in electronic formats.



Level 3 Unit- Residential, Commercial and Industrial Electric Vehicle Charging Equipment Installation

Unit aim

This unit aims to provide learners with expert guidance in the knowledge and understanding of Electric Vehicle charging equipment installation in a residential, commercial and industrial locations.

Unit introduction

The learner will be required to understand, identify and apply statutory regulations and organisational safety requirements in the electrical vehicle charging point environment. It allows learners to learn, develop and practise the skills required for employment in the electrical vehicle charging point installation category.

The learner's responsibilities will require them to comply with all relevant statutory and organisational policy and procedures for health and safety in the workplace. The learner must act in a responsible and safe manner at all

times and present themselves in the workplace suitably prepared for the activities to be undertaken. The learner will be expected to report any problems with health and safety issues, to the relevant authority.

Assessment

To achieve this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit through a variety of assessment methods appropriate to the delivery environment.

Unit Reference Number		A/618/7719
Qualification Framework		RQF
Title		Residential, Commercial and Industrial Electric Vehicle Charging Equipment Installation
Unit Level		Level 3
Guided Learning Hours		16 GLH
Total Qualification Time		20 TQT
Unit Credit Value		2 Credits
Unit Grading Structure		Pass / Fail

	Learning Outcome		**Assessment Criteria - The learner can**	**Criteria expansion**
1	Know and understand the health and safety requirements relating to electric vehicle charging points in all types of locations.	1.1	What are the additional health and safety standards for electric vehicle	
		1.2	Identify the hazards and risks that are associated with the following: • their working environment • the equipment that they use	

			• materials and substances (where appropriate) that they use	
		1.3	Explain the statutory regulations relating to • Work regulations • Health and safety	Must include: BS EN 61851 Part 1 Electromagnetic Compatibility Regulations 2006 Electrical Equipment Safety Regulations 1994 Electricity at Work Regulations Health and Safety at Work Act Electricity Safety, Quality and Continuity Regulations (ESQCR)
		1.4	Demonstrate understanding of duties and obligations to health and safety by: • Responsibilities as an individual under the • Health and Safety at Work Act	
		1.5	Identify appropriate sources of information and guidance on health and safety issues with EV charging points, such as: • Personal Protective Equipment (PPE) • COSHH regulations • Risk assessments • Identifying the warning signs and labels of the main groups of hazardous or dangerous substances • Complying with the appropriate statutory regulations at all times	
2	Understand the key requirements relating to electric vehicle charging equipment in residential, commercial and industrial locations	2.1	Describe the statutory and non-statutory documents relating to the selection, installation and commissioning of electric vehicle charging equipment	Must include: Statutory documentation Electricity at Work Regulations Health and Safety at Work Act Electricity Safety, Quality and Continuity Regulations (ESQCR) Traffic management order Planning consent

				Non-statutory documentation GS 38
		2.2	List the requirements for installing electrical charging equipment in residential, commercial and industrial locations.	Must include: IET code of practice for Electric Vehicle Charging Equipment Installation, 4th edition and beyond. BS 7671, 18th edition wiring regulations IET Guidance Notes Registration requirements Commercial: Compex On street: Highway Electrical Registration Scheme (HERS)

3	Know advantages and disadvantages of different types of electric vehicle charging arrangements and equipment in residential, commercial and industrial locations	3.1	Name the electric vehicle charging equipment for different modes of charging	
		3.2	List the advantages and disadvantages of electric vehicle charging modes in • Residential • Commercial • Industrial locations	
		3.3	Classify industry range of plugs, socket-outlets and charging connections in • Residential • Commercial • Industrial locations	
		3.4	Demonstrate variations in electric vehicle charging equipment features in • Residential • Commercial • Industrial locations	
		3.5	List the applications of electric vehicle charging equipment.	Must include: Equipment Power supplies Multiple socket-outlets Feeder pillars

				Protective devices Timers Built-in energy meters Security features Communication features.
4	Recognise the preparation for design and installation of electric vehicle charging equipment	4.1	Explain the process of assessment prior to installing electric vehicle charging equipment in • Residential • Commercial • Industrial locations	
		4.2	Detail what needs to be assessed with regards to the location of vehicle charging equipment in • Residential • Commercial • Industrial locations	Must include: Assessment with regards to the location Potentially explosive atmospheres Parking spaces Single vehicle charging Multiple vehicle charging Vehicle impact protection Control device location Socket-outlet location Ventilation and cooling Ingress Protection (IP) rating Residential only: Local authority building notice Part P competence person scheme
		4.3	Detail the design and installation requirements in relation to the system earthing and supply arrangements	Must include: Assessed with regards to the location Potentially explosive atmospheres Parking spaces Single & multiple vehicle charging Basic, additional and Vehicle impact protection Control device location Socket-outlet location Ventilation and cooling IP protection.

				Installation requirements Earthed and unearthed systems TN-S TN-C-S TT IT Single-phase/Three-phase methods Automatic Disconnection of Supply (ADS) Electrical separation
		4.4	Describe procedures for circuit arrangements and cable selection for electrical vehicle equipment	
		4.5	Detail methods used for protection against electric shocks in • Residential • Commercial • Industrial locations	
		4.6	List labelling required for electric vehicle charging installations in • Residential • Commercial • Industrial locations	
		4.7	State the requirements for isolation and switching in electric vehicle charging installations.	
5	Be able to prepare for design and installation of electric vehicle charging equipment	5.1	Carry out assessments prior to installing electric vehicle charging equipment	Must include: Flats Apartment Rural dwellings Industrial locations Factories and workshops
		5.2	Apply design and installation requirements in relation to the system earthing and supply arrangements in	

			• Residential • Commercial • Industrial locations	
		5.3	Describe the appropriate cable for the supplies to electric vehicle charging equipment	
		5.4	Choose suitable methods used for protection against electric shock which apply to electric vehicle charging installations	Must include: Range Assessments Installation Supply metering Adequacy of supply Earthing arrangements Simultaneous contact assessment GPRS coverage Manufacturer's requirements Planning consent
		5.5	Describe suitable Residual Current Device (RCD) protection for electric vehicle charging installations	Must include: Location Potentially explosive atmospheres Parking spaces Single vehicle charging Multiple vehicle charging Vehicle impact protection Control device location Socket-outlet location Ventilation and cooling IP protection BS 7671 BS EN 61851
		5.6	Choose suitable equipment for isolation and switching in electric vehicle charging installations	Installation requirements TT TN-S TN-C-S Single-phase Three-phase. ADS Electrical separation

				Basic protection Additional protection. Installation requirements BS 7671 BS EN 61851. Installation locations Domestic installations On-street locations Commercial and industrial installations.
		5.7	Apply, design and installation requirements for specific types of installation locations. • Residential • Commercial • Industrial locations	
6	Be able to install electric vehicle equipment for residential, commercial and industrial locations	6.1	Apply procedures for dealing with health and safety requirements in the workplace	To include: Company procedures Manufacturing policies Government legislation
		6.2	Complete information required for completion of the checklist contained in the IET code of practice	Must include: Risk assessment Method statements Traffic management Safe isolation procedures. Domestic installations On-street locations Commercial and industrial installations Methods of fixing Wall mounted On-street Floor standing
		6.3	Apply methods of fixing electric vehicle charging equipment for • Residential/on street • Commercial • Industrial locations	Must include: Methods of fixing Wall mounted On-street Floor standing

		6.4	Demonstrate and install cable installation methods and wiring systems	
		6.5	Apply cable termination methods	
7	Know the requirements for inspection, testing, commissioning and handover of electric vehicle charging equipment	7.1	Describe information required to complete an Electrical Installation Certificate	Must include Continuity of protective conductors Insulation resistance Separation of circuits Polarity Verification of automatic disconnection of supply Earth electrode resistance Earth fault loop impedance testing Prospective fault current testing Additional protection Functional testing.
		7.2	List requirements for a visual inspection during initial verification	
		7.3	Explain methods used to test circuits installed associated with vehicle charging equipment	
		7.4	Detail the information and documentation which are handed to the client on completion and handover	
		7.5	Illustrate what the client must be made aware of for continued operation of electric vehicle charging equipment and supplies	Must include: Continuity of protective conductors Separation of circuits Polarity Verification of automatic disconnection of supply Additional protection Functional testing. Information and documentation Manufacturers' documentation Certification Warranties Instructions Maintenance requirements.

		7.6	Describe the requirements for a Distribution Network Operator (DNO) notification.	
8	Understand how to carry out inspection, testing, commissioning and handover of electric vehicle charging equipment	8.1	Perform visual inspections during initial verification	Must include: Relevant tests Continuity of protective conductors Insulation resistance Separation of circuits Polarity Verification of automatic disconnection of supply Earth electrode resistance Earth fault loop impedance testing Prospective fault current testing Additional protection Functional testing.
		8.2	Demonstrate the relevant tests to circuits associated with vehicle charging equipment	
		8.3	Apply processes for electric vehicle charging equipment.	
		8.4	Perform handover processes for electric vehicle charging equipment	