End-point assessment plan for Automation & Controls Engineering Technician apprenticeship standard

Apprenticeship standard reference number	Level of this end point assessment (EPA)	Integrated
ST0662	4	N/A

Contents

Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Automation & Controls Engineering Technician apprenticeship standard. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Automation & Controls Engineering Technician apprentices, their employers and training providers.

Full time apprentices will typically spend 48 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices will spend a minimum of 12 months on-programme.

The EPA period should only start, and the EPA be arranged, once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, all of the pre-requisite gateway requirements for EPA have been met and that they can be evidenced to an EPAO.

All pre-requisites for EPA assessment methods must also be complete and available for the assessor as necessary.

As a gateway requirement and prior to taking the EPA, apprentices must complete all approved qualifications mandated in the Automation & Controls Engineering Technician standard.

These are:

- A level 4 technical engineering qualification covering at least one of the following areas: Electrical/Electronic Engineering, General Engineering, Manufacturing Engineering, Operations Engineering

For level 3 apprenticeships and above apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA.

The EPA must be completed within an EPA period lasting a maximum of 7 month(s), beginning when the apprentice has passed the EPA gateway.

The EPA consists of 2 discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Project, Report and Presentation with Questioning

· Fail
· Pass
· Distinction

Assessment method 2: Occupational Professional Discussion

· Fail
· Pass
· Distinction

Performance in the EPA will determine the overall apprenticeship standard and grade of:

· Fail
· Pass
· Merit
· Distinction

EPA summary table

On-programme (typically 48 months)	• Training to develop the occupation standard's knowledge, skills and behaviours. • Working towards English and maths at level 2 if required • Compilation of portfolio of evidence
End-point Assessment Gateway	• Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard. • English/mathematics Level 2 • EPAO and employer agree the subject title and scope of the project to be used in assessment method 1, and ensure it allows sufficient opportunity for the apprentice to demonstrate the KSBs mapped to this assessment method Apprentices must complete the following approved qualifications mandated in the standard: • A level 4 technical engineering qualification covering at least one of the following areas: Electrical/Electronic Engineering, General Engineering, Manufacturing Engineering, Operations Engineering Apprentices must complete: • Portfolio of evidence for professional discussion. This must be signed by the employer to confirm that this is the apprentices own work.
End Point Assessment (which would typically take 7 months)	Assessment Method 1: Project, Report and Presentation with Questioning With the following grades: · Fail · Pass · Distinction Assessment Method 2: Occupational Professional Discussion With the following grades: · Fail · Pass · Distinction

	Overall end-point assessment grade summary With the following grades: · Fail · Pass · Merit · Distinction
Professional recognition	Aligns with recognition by: • Institute of Engineering & Technology (IET)/Engineering Technician (EngTech) • Institute of Mechanical Engineers (IMechE)/Engineering Technician (EngTech)

Length of end-point assessment period:

The EPA must be completed within an EPA period lasting a maximum of 7 month(s), beginning when the apprentice has passed the EPA gateway.

Order of assessment methods

The assessment methods can be delivered in any order.

Gateway

The EPA period should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard and this has been confirmed with the EPAO. That is to say they are deemed to have achieved occupational competence. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

In addition to the employer's confirmation that the apprentice is working at or above the level in the occupational standard, the apprentice must have completed the following gateway requirements prior to beginning EPA:

English and mathematics at level 2.

For those with an education, health and care plan or a legacy statement the apprenticeships English and mathematics minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.

Apprentices must complete the following approved qualifications as mandated in the standard:

- A level 4 technical engineering qualification covering at least one of the following areas: Electrical/Electronic Engineering, General Engineering, Manufacturing Engineering, Operations Engineering

For the Project and Presentation, the apprentice will be required to submit:

- The employer and EPAO are responsible for agreeing a project subject, title and scope at gateway

For the Occupational Professional Discussion, the apprentice will be required to submit:

- The portfolio, compiled throughout the apprenticeship and completed by the gateway. This must be sufficient enough to evidence that the apprentice can apply the knowledge, skills and behaviours required as mapped to assessment method 2 (AM2). There must be at least one piece of evidence relating to each knowledge, skill and behaviour mapped to AM2 although in most cases one piece of evidence will be referenced against more than one KSB requirement. It is expected that there will be a minimum of 14 and a maximum of 18 pieces of evidence to allow flexibility, but also encourage economical use of evidence for the number of KSBs to be covered.

- The portfolio should contain written accounts of activities that have been completed and referenced against the knowledge, skills and behaviours, supported by appropriate evidence, including but not limited to photographic evidence and/or work products, reference guides, presentations, reports, schematics, specifications and work orders. Progress review documentation can also be included. The apprentice's manager/mentor will typically support the development of the portfolio in accordance with organisational policy and procedures, although the EPAO will provide further guidance on the content. The portfolio produced must be the

apprentice's work only; employer support should not extend to any direct contributions to the collation or production of the portfolio.

- The portfolio, and therefore the evidence gathered, can take the form of either paper based or electronic content/facilitation.

Assessment methods

Assessment Method 1: Project and Presentation (consisting of project report, presentation and questioning)

(This Method has 2 components.)

Method 1 Component 1: work-based project, consisting of written project report

Overview

The project takes place after the apprentice has gone through the Gateway process.

The project report, presentation and questioning must be based on a work-based project/task/group of tasks that the apprentice has completed during the EPA period.

Evidence from the different components (report, presentation and questioning) will be assessed holistically against the KSBs mapped to this assessment method.

The work-based project should be designed to ensure that the apprentice's work meets the needs of the business, is relevant to their role and allows the relevant KSBs to be demonstrated for the EPA. Therefore, the project's subject, title and scope will be agreed between the employer and the EPAO. The employer will ensure it has a real business application and the EPAO will ensure it meets the requirements of the EPA (including suitable coverage of the KSBs assignment to this assessment method). The EPAO should sign-off the project title and scope at the gateway to confirm its suitability prior to the project commencing.

The rationale for this assessment method is:

This is a holistic method of assessment of multiple KSBs across a range of duties carried out through work-based projects or engineering activities (e.g. service visits). It is intended that this method of assessment allows the end-point assessor to ascertain the competence level of an apprentice against the context of real experiences in automation environments.

Scope and depth of a project will vary between employers of different sizes. In order to improve adoption by SME employers, multiple smaller sub-projects/associated activities can be utilised as a means of covering all KSBs required, however, this should be restricted to a maximum of 3 sub-projects/activities, which should then be presented in one overarching project report.

Delivery

Apprentices will conduct a project in the form of an employment-based assignment or group of assignments (maximum of 3).

Typically, the assignments will be undertaken over a 24-week period. The apprentice must complete the project report and submit this and the presentation by or before the end of week 24 of their EPA period. The EPAOs must ensure the presentation is scheduled during the apprentice's maximum EPA period, after the submitted report and presentation have been reviewed.

Project Report

The employer will ensure the apprentice has reasonable and sufficient time and the necessary resources, within this period, to plan and undertake the project/s.

Whilst completing the project report, the apprentice should be subject to the supervision arrangements outlined below:

Regular and appropriate work-based supervision and support. Supervision should also include the allowance of the apprentice sufficient time away from regular duties to complete the written requirement of the project (e.g. report and presentation).

The project report and presentation should be in the form of either paper based or electronic submission.

The project may be based on any of the following:

· an idea/opportunity
· a recurring issue
· a specific problem
· client/stakeholder (internal or external) requirement

The purpose of the project should be to reflect the KSB requirements of the Automation & Control Engineering Technician standard, which have been mapped to this assessment method. As a minimum all project reports must include:

• An introduction - what is the project/activity about?
• Individual scope of the project/activity - define the objective, responsibilities and timescales.
• Project/activity delivery
• Project outcomes
• Reflection and conclusions

The project report must contain 5,000 words +/-10%.

A tolerance of plus or minus 10% is allowed.

Appendices, references, diagrams etc. will not be included in this total.

The project must map, in an appendix, how it evidences the relevant KSBs for this assessment method. The supporting evidence can include job cards, data reports, fault reports, commissioning reports, compliance records, minutes of project meetings, pictures or links to video clips. This list is not exhaustive and other evidence sources are permissible. However, self-reflective accounts and witness testimonies are not valid evidence sources, except in the case of B11 which does require reflection to be quantified. The annex must include a mapping of the evidence to the relevant KSBs for this assessment method. It is expected that each piece of evidence will cover multiple KSBs. The annex must also include a statement from the employer authenticating the apprentice's evidence. It is important that the apprentice carefully selects the evidence to be used to support the project report and only includes relevant evidence. It is not about the volume of evidence but the quality of evidence that aligns to and covers the relevant KSBs.

The independent assessor must review the report and supporting evidence alongside the presentation prior to the presentation taking place. Typically, this will be a minimum of 10 working days prior to the presentation with questioning. However, for efficiency reasons this time can be reduced on agreement with the EPAO, who is responsible for ensuring that the assessor has sufficient time to prepare for the presentation and questioning.

The project will be conducted as set out here:

Completion of an end-point assessment project can be carried out as a single overarching employer project or multiple smaller employer projects/activities that meet the scope and definition of the project and are compiled into one report, and which meet the employer's commitment to stakeholder needs. All projects/activities, including where a maximum of three smaller sub-projects/activities are used, must be agreed in advance with the End-Point Assessment Organisation.

When the project report and presentation are submitted, the employer and the apprentice should verify the submitted work is that of the apprentice.

Marking

The independent assessor will review and mark the project report in a timely manner, as determined by the EPAO, and without extending the EPA unnecessarily. Similarly, all quality control processes will also be conducted in a timely manner, as determined by the EPAO. Marks will only be given to work that is the apprentices own. (For example, marks will not be awarded for the project specification as this is usually decided by the employer and the EPAO). However, if the apprentice does come up with the concept and therefore specification of a project that the EPAO and employer believe meets the assessment criteria, then marks can be awarded. The project and presentation will be marked as a single piece of work and compensation can be allowed whereby evidence can be considered and drawn from either project or presentation.

Required supporting material

EPAOs will produce the following material to support this assessment method:

1. Marking scheme.
2. Data capture forms for results and evidence including gaps, mapped against the KSBs
3. Guidance document on how employers can assist in determining suitable project/activity content.
4. Guidance document for both apprentices and employers as to how the assessment method will be administered, including timescales and deadlines.

Method 1 Component 2: Presentation with questioning

Overview

Apprentices will prepare and deliver a presentation that appropriately covers the KSBs assigned to this method of assessment.

The presentation will be based on the project carried out in component 1 and will cover a summary of the project and report:

1. Description as to the scope of the presentation – which engineering project/s or activities are being presented.

2. Description of the role of the apprentice in these activities.

3. Summary of actions undertaken by the apprentice and outcomes of these activities.

4. Achievements, difficulties faced and lessons learned. This presentation requires the apprentice to fully illustrate the KSBs that are mapped to this assessment method.

5. The presentation will be based upon the project and/or activities described above in assessment component 1.

The independent assessor must review the project report and presentation prior to the end-point assessment at a date, time and location agreed with the employer. This must be a minimum of 10 working days prior to the presentation taking place. However, for efficiency reasons this time can be reduced depending on the number of apprentices requiring the EPA and the availability of the assessor.

The project report and supporting evidence must be available throughout the duration of the presentation and questioning components so that it can be referenced by the independent assessor and/or apprentice.

The apprentice should have a minimum of two weeks' notice of the date and time of the presentation and questioning component once the assessor has completed their review.

The apprentices can use a range of aids to support the presentation, such as flip charts, video clips, work products/outputs and Power Points.

The presentation will be completed and submitted after the gateway and will be presented to an independent assessor, either face-to-face or via online video conferencing. If using an online platform, EPAOs must ensure appropriate measures are in place to prevent misrepresentation.

The rationale for this assessment method is:

This is a holistic method that will allow some KSBs which may not naturally occur in every workplace or may take too long to observe to be assessed. This method facilitates the assessment of multiple KSBs across a range of duties carried out across engineering activities in the workplace (e.g. service visits). It is intended that this method of assessment allows the end-point assessor to ascertain the competence level of an apprentice against the context of real experiences in automation environments. This component complements the project report component as it allows the apprentice to provide more clarity around the report and the assessor the opportunity to probe and clarify issues.

Workplace observation would not be suitable for this assessment method as some of the project activities are sporadic and vary in time (both short and long duration activities), that are difficult to synchronise with an observation visit. This component is a valid way to assess the evidence of these activities.

Delivery

The presentation and questioning will last for 60 minutes in total. This will be a 30 minute presentation followed by 30 minutes of questions. The assessor has the discretion to increase the time of the presentation by up to 10% to allow the apprentice to complete their last point.

The independent assessor will ask a minimum of10 questions at the end of the presentation. The questions will be drawn from a question bank supplied by the EPAO (but can be adapted to meet the circumstances of the individual's project and presentation), to confirm the independent assessor's understanding of the presentation and how it demonstrates the relevant knowledge, skills and behaviours.

To deliver the presentation, the apprentice will have access to:
· PowerPoint
· flip chart
· work products
· videos
· computer
· notes
· interactive demonstrations

The presentation will be conducted as follows:

The presentation would normally be conducted face-to-face on a one-to-one basis between the apprentice and the independent assessor. The use of live video conferencing is allowed subject to the controls outlined below.

Where special circumstances arise, to ensure equal access for those apprentices with special requirements (e.g. hearing impairment), an additional person may attend (e.g. independent signer).

The independent assessor will make all grading decisions.

Venue

EPAOs must ensure that the presentation and questioning elements are conducted in a suitable controlled environment in any of the following:

· employer's premises
· other suitable venue selected by the EPAO (e.g. a training provider)
· the assessment will usually be face-to-face, but video-conferencing (or similar technology) is acceptable if the apprentice, the employer and the assessor all agree this is appropriate, and robust technology is in place to ensure the apprentice is not disadvantaged. EPAOs must ensure appropriate measures are in place to prevent misrepresentation, for example, screen share and 360-degree camera function with assessors when the assessments are undertaken remotely.

The venue should be a quiet room, free from distraction and external influence.

Support material

EPAOs will produce the following material to support this assessment method:

1. Marking scheme.
2. Data capture forms for results and evidence including gaps, mapped against the KSBs.
3. Guidance document for both apprentices and employers as to how the assessment method will be administered, including timescales and deadlines.
4. EPAOs must develop a bank of sample questions which can be used and contextualised by independent assessors during the questioning. The independent assessor can develop/adapt questions based on their review of the report, presentation and supporting evidence. This bank of questions should be large enough to prevent predictability including in the event of re-sits and retakes. Annual review of the questions should take place to ensure suitability.

Assessment Method 2: Occupational Professional Discussion (This Method has 1 component.)

Method 2 Component 1: Discussion underpinned by portfolio

Overview

This assessment will take the form of a professional discussion, which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method. It will involve the questions that will focus on coverage of prior learning or activity, offering the apprentice an opportunity to demonstrate occupational competence.

The professional discussion can take place in any of the following:

· employer's premises
· a suitable venue selected by the EPAO (e.g. a training provider's premises)
· The assessor would normally be in the room, but video-conferencing (or similar technology) is acceptable if the apprentice, the employer and the assessor all agree this is appropriate, and robust technology is in place to ensure the apprentice is not disadvantaged. The EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way.

The rationale for this assessment method is:

This is a holistic method of assessment of multiple KSB's across a range of duties carried out through work-based projects or engineering activities (e.g. service visits). It is intended that this method of assessment allows the end-point assessor to ascertain the competence level of an apprentice against the context of real experiences in automation environments. The discussion allows the assessor to explore the breadth and depth of the apprentices understanding not available through other available assessment methods.

Delivery

The independent assessors will conduct and assess the professional discussion.

The professional discussion must last for 45 minutes. The independent assessor has the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer. Further time may be granted for apprentices with appropriate needs, for example where signing services are required.

During this method, the independent assessor must generate their own questions.

The professional discussion will be conducted as set out here:

The discussion would normally be conducted face-to-face on a one-to-one basis between the apprentice and the independent assessor. The use of live video conferencing is allowed subject to the controls above.

Where special circumstances arise, to ensure equal access for those apprentices with special requirements (e.g. hearing impairment), an additional person may attend (e.g. independent signer) in-line with the EPAOs Reasonable Adjustments policy..

The discussion will consist of a minimum of 10 open questions created after the independent assessor's review of the portfolio.

Questions must be created that test the KSBs mapped to this assessment method and relate to evidence provided in the portfolio.

The independent assessor will ask a question which will be followed by discussion with the apprentice.

The independent assessor may, at their discretion, ask follow up questions for clarification.

Both apprentice and independent assessor should have a copy of the portfolio to hand during the discussion and can refer to this at any time.

Video conferencing can be used to conduct the professional discussion, but the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way.

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the professional discussion.

The independent assessor will make all grading decisions.

Venue

The professional discussion should take place in a quiet room, free from distractions and influence.

Other relevant information

A structured specification and question bank must be developed by EPAOs. The specifications, including questions relating to the underpinning knowledge, skills and behaviours, must be varied yet allow assessment of the relevant KSBs.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Independent assessors must be developed and trained by the EPAO in the conduct of professional discussion and reaching consistent judgement.

EPAOs will produce the following material to support this assessment method:

1. Marking scheme.
2. Data capture forms for results and evidence including gaps, mapped against the KSB's.
3. Guidance document for both apprentices and employers as to how the assessment method will be administered, including timescales and deadlines.
4. EPAOs must develop a bank of sample questions which can be used and contextualised by independent assessors during the questioning. The independent assessor can develop/adapt questions based on their review of the report, presentation and supporting evidence. This bank of questions should be large enough to prevent predictability including in the event of re-sits and retakes. Annual review of the questions should take place to ensure suitability.

Weighting of assessment methods

All assessment methods are weighted equally in their contribution to the overall EPA grade.

Grading

Assessment method 1: Project and Presentation

Fail: The apprentice will be deemed to have failed the project and presentation assessment method if any of the criteria / descriptors for 'Pass' grade are not met.

KSBs	Pass	Distinction
Technical, Engineering, Mathematical Skills, and Delivery of Automation & Control Engineering Solutions - K1, K2, K3, K6, K11, S3	Applies technical, engineering, mathematical skills in the project work submitted, cognisant of industry procedures, safety and quality requirements, risk and relevant environmental impacts. These should be appropriately applied, with their role in establishing the solution clearly identified and explained. Applies the technical, engineering, mathematical skills appropriate to the specialism. The nature of the solution should be evidenced as being considered and dismissed or considered and applied. Selects, with justification, appropriate electrical, automation, instrumentation and industrial networking solutions. Uses technical documentation to identify appropriate solutions.	Differentiates between a range of technical, engineering, mathematical solutions in the project work submitted. Analyses different possibilities to undertake the project/activity and identifies risks and benefits of different solutions to inform decisions. Evaluates the suitability of different electrical, automation, instrumentation and industrial networking solutions available. Critically reviews technical documentation.
Implementation - K8, S8	Demonstrates an understanding of different software tools and justifies choice using the most appropriate in order to carry out tasks that comply with project specification.	Differentiates between different software tools and solutions (e.g. program language), and identifies and justifies the most efficient methods in order to comply with the project specification.
Diagnostics - K10, S4	Demonstrates an understanding of different hardware and software tools and uses the most appropriate in order to carry out fault finding tasks. Records the nature of faults encountered in line with agreed processes.	Explains the importance of recording and reporting of fault finding and how it can be prevented in future.

Health & Safety - K4, K12, S1, B1	Applies a safety-first approach for themselves and colleagues; keeps themselves and others safe. Comply with workplace health, safety & environmental practices and regulations, maintaining a safe and secure working environment. Comply with company practices, processes and procedures associated with safety. Demonstrates an understanding of relevant electrical and functional safety legislation and directives and how they are applied in the project. Undertake and document risk assessments and hazard reviews in accordance with company procedures.	N/A
Professionalism - B3, B4, B8, B11	Demonstrate a level of autonomy to the extent of their authority, which shows the ability to plan, organise, carry out work to plan, time and resource, knowing when to collaborate and consult. Demonstrate active participation and engagement with stakeholders. Critically review outcomes of the project and own contributions and identify areas of improvement. Demonstrate an approach to stakeholder engagement that is built on professional working relationships and is clear about when, what and how information needs to be communicated to secure the necessary stakeholder support.	N/A
Engineering Documentation - S2	Demonstrate the ability to interpret a suitable range of technical documentation to extract relevant information. Produce relevant technical documentation that meets the need of the project. Any documentation produced aligns with company systems.	Combine all relevant information in addition to that already produced into a technical construction file for issue to stakeholders. Create a file that is logically presented.

Assessment method 2: Occupational Professional Discussion

Fail: The apprentice will be deemed to have failed the occupational professional discussion assessment method if any of the criteria / descriptors for 'Pass' grade are not met.

KSBs	Pass	Distinction
Technical, Engineering, Mathematical Skills, and Delivery of Automation & Control Engineering Solutions - K5, K7, K9	Demonstrate an understanding of the foundation knowledge required to implement a working automation system.	Differentiate between the selection of appropriate technology. Explain the relationship between each of the technologies and how they combine into an automation system.
Implementation - S5, S6, S7	Describe and explain how an appropriate range of methods have been applied for configuration, calibration, programming and support activities underpinned by examples.	N/A
Health & Safety - K4, B1	Compare examples of safe and unsafe, good and bad practice. Identify the consequences of good and bad practices.	Challenges unsafe and advocates safe working practices.
Professionalism - B2, B5, B6, B7, B9, B10	Evidence instances where actions have been completed and approach amended in order to meet a change in priorities. Be receptive to the needs and concerns of others, especially where related to diversity and equality and exercises responsibilities in an ethical manner. Describes how teams can work effectively, what constitutes collaborative working and can justify why this is important in the occupation. Outline an activity in which they have undertaken an ambassadorial role. Show evidence of CPD.	Reference and discuss the impact of not following professional practice, referencing the potential consequences and risks.
Quality Systems - K13	Demonstrate a critical analysis that reflects on the importance of both quality and continuous improvement techniques and processes. This must involve the ability to discuss the strengths, limitations and the positive impacts,	Identifies the benefits that quality and continuous improvement techniques and processes deliver to stakeholders. Analyses the risks associated with not carrying quality and continuous improvement activities.

	as well as an understanding of why they are appropriate.	

Overall EPA grading

All EPA methods must be passed for the EPA to be passed overall.

If any assessment method is marked as a fail, that will be the final overall grade.
To achieve a pass, a pass must be achieved in every assessment method.
To achieve a merit, a pass and a distinction in either assessment method must be achieved.
To achieve a distinction, a distinction in both assessment methods must be achieved.

Each of the knowledge, skill and behaviour items must be achieved in full at a pass as evidenced in the grading criteria to achieve a pass.
Each of the knowledge, skill and behaviour items must be achieved in full at a distinction as evidenced in the grading criteria to achieve a distinction.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole:

Assessment method 1	Assessment method 2	Overall grading
Fail	Fail	Fail
Fail	Pass	Fail
Pass	Fail	Fail
Fail	Distinction	Fail
Distinction	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Merit
Distinction	Pass	Merit
Distinction	Distinction	Distinction

Roles and responsibilities

Role	Responsibility
Apprentice	• complete the on-programme elements of the apprenticeship i.e. 1. the mandated qualification. 2. upkeep of portfolio of evidence relative to the AM2 KSBs of this standard. 3. undertake appropriate training according to all KSBs of this standard. • prepare for and complete the EPA
Employer	• identify when the apprentice is ready to pass the gateway and undertake their EPA. The employer may request assistance from the Training Provider when making their judgement. • notify the EPAO that the apprentice is ready to enter the gateway • to provide the independent assessor with any relevant technical support, advice and guidance such as confirming company policies, procedures, processes, providing context on technical information or on emerging technologies.
EPAO	As a minimum EPAOs should: • appoint assessors, administrators and markers to facilitate the EPA • provide training and CPD to the independent assessors they employ to undertake the EPA • have no direct connection with the apprentice, their employer or training provider i.e. there must be no conflict of interest • have processes in place to conduct internal quality assurance and do this on a regular basis • organise standardisation events and activities in accordance with this plan's IQA section • organise and conduct moderation of independent assessors' marking in accordance with this plan • have, and operate, an appeals process • to request and review from the employer, any relevant technical support, advice and guidance such as confirming company policies, procedures, processes, providing context on technical information or on emerging technologies. • to approve the project scope to be used in AM1 • confirm when the apprentice is ready to exit the gateway and undertake the EPA
Independent assessor	As a minimum an Independent assessor should: • understand the standard and assessment plan

	• deliver the end-point assessment in-line with the EPA plan • comply to the IQA requirements of the EPAO • satisfy the criteria outline in this EPA plan • be independent of the apprentice, their employer and training provider(s) i.e. there must be no conflict of interest • have recent relevant experience of the occupation/sector gained in the last two years or significant experience of the occupation/sector. This should be at least at the same level as the standard. • have the capability to assess the apprentice at this level • attend the required number of EPAOs standardisation and training events per year (as defined in the IQA section) • to request and review from the employer, any relevant technical support, advice and guidance such as confirming company policies, procedures, processes, providing context on technical information or on emerging technologies.
Training provider	As a minimum the training provider should: • work with the employer to ensure that the apprentice is given the opportunities to develop the KSBs outlined in the standard and monitor their progress during the on-programme period • advise the employer, upon request, on the apprentice's readiness for EPA prior to the gateway • Plays no part in the EPA itself

Internal Quality Assurance (IQA)

Internal quality assurance refers to the requirements that EPA organisations must have in place to ensure consistent (reliable) and accurate (valid) assessment decisions. EPA organisations for this EPA must:

- appoint independent assessors who have knowledge of the following occupational areas: Experience of selecting, installing, commissioning and maintaining a range of automation and control systems and work activities demonstrated within the Automation & Control Engineering Technician Apprenticeship Specification.
- appoint independent assessors who are competent to deliver the end-point assessment and who meet the following minimum requirements:
    - have recent relevant experience of the occupation/sector gained in the last two years or significant experience of the occupation/sector. This should be at least at the same level as the standard, and be able to evidence recent CPD activities.provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading.
- have robust quality assurance systems and procedures that support fair, reliable and consistent assessment across the organisation and over time.
- operate induction training and standardisation events for independent assessors when they begin working for the EPAO on this standard and before they deliver an updated assessment method for the first time

Re-sits and re-takes

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit any failed assessment methods only.

Resits should be taken within 2 months of the fail notification and retakes should be completed within 4 months of the fail notification, otherwise the entire EPA must be taken again, unless in the opinion of the EPAO exceptional circumstances apply outside the control of the apprentice or their employer.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to merit/distinction or merit to distinction.

Where any assessment method has to be re-sat or re-taken, the apprentice will be awarded a maximum EPA grade of pass, unless the EPAO determines there are exceptional circumstances requiring a re-sit or re-take.

Affordability

Affordability of the EPA will be aided by using at least some of the following practice:

· using an employer's premises
· The use of digital technology for End Point Assessment

Professional body recognition

This apprenticeship is designed to prepare successful apprentices to meet the requirements for registration as Automation & Controls Engineering Technician with
Institute of Engineering & Technology (IET)/Engineering Technician (EngTech)

Institute of Mechanical Engineers (IMechE)/Engineering Technician (EngTech)

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments for this apprenticeship standard. This should include how an apprentice qualifies for Reasonable Adjustment and what Reasonable Adjustments will be made. The adjustments must maintain the validity, reliability and integrity of the assessment methods outlined in this assessment plan.

Mapping of knowledge, skills and behaviours (KSBs)

KSB code	KSB statement	Methods mapped against
Knowledge		
K1	Engineering maths - mathematical principles and theories that underpin engineering	AM1
K2	Engineering principles - the underlying principles of electrical and electronic circuits and devices	AM1
K3	Functional solutions - Create functional solutions; identifying and justifying a solution to a given engineering need.	AM1
K4	Safety procedures - relevant safety procedures required to operate on automation equipment in an industrial environment.	AM1, AM2
K5	Single and three phase circuits - single phase and three phase supplies on AC and DC motor and control circuits.	AM2
K6	Automation knowledge - Programmable Logic Controllers (PLC), Variable Speed Drives (VSD), Human Machine Interface (HMI) & Supervisory Control and Data Acquisition (SCADA), robotics hardware and software tools to carry out configuration, programming and fault finding duties.	AM1, AM2
K7	Instrumentation knowledge - instrumentation used to measure flow, temperature, pressure etc and the means by which they transmit measurement data.	AM2
K8	Use of software tools - Justification in the utilisation of software tools would be for but not limited to the changing of hardware configurations, firmware updates, software modifications and commissioning.	AM1
K9	Industrial networking knowledge - the application, installation and operational characteristics of industrial communication	AM2

	networks at Supervisory (e.g. Ethernet), Cell (e.g. PROFINET/PROFIBUS) and Field (e.g. AS-Interface) levels.	
K10	Use of diagnostic tools - diagnostic tools and equipment including web-based diagnostics incorporated into network devices and other software tools (e.g. PROFITrace)	AM1
K11	Understand technical documents - Ability to follow electrical system circuit diagrams, understand the operation of the various components that make up an automation system	AM1
K12	Safety legislation and responsibilities - electrical safety system legislation & directives	AM1
K13	Quality systems - quality assurance principles to ensure operation, consistency and quantification of enhancement of manufacturing and process applications.	AM2
Skills		
S1	Safety Effective - The ability to work safely in an industrial environment and where required, produce risk assessment/method statement documentation. Be able to apply the principles of functional machinery and/or process safety including SIL (Safety Integrated Level) and PL (Performance Level) terminology.	AM1
S2	Engineering documentation - Production and interpretation of a range of technical documentation (device manuals, operating procedures, schematics, fault reports etc), and working with company documentation systems.	AM1
S3	Project engineering capabilities - Support of installation, commissioning, shut-down, start-up and maintenance/service/support of a wide range of systems and devices	AM1
S4	Diagnostic capabilities - Fault finding, diagnosis, rectification and reporting of automation control systems and controls applications via the utilisation of formal problem solving methods and diagnostic tools/software.	AM1

S5	Instrumentation configuration and calibration - Set-up, calibrate and commission a wide variety of field level instrumentation that interfaces to automation & control systems.	AM2
S6	Industrial Networks configuration and support - configure, assist commissioning and continued support of industrial network solutions at all hierarchical levels of control system integration using the requisite tools and or software.	AM2
S7	HMI & SCADA configuration and programming - Make changes to existing systems or implement new configurations.	AM2
S8	PLC/Robot configuration and programming - Implement complex PLC/Robot program content and configurations to affect changes to increase availability and or efficiency of automation controlled machinery and the ability to configure PLC and or Robot hardware and program a wide variety of PLC's and or Robot's.	AM1
Behaviours		
B1	Zero Harm - Always prioritise on Health and Safety best practice.	AM1, AM2
B2	Resilience - Sound and established ability to work effectively both in a team and alone.	AM2
B3	Personal excellence - Interact professionally with clients and stakeholders.	AM1
B4	Communicative - High quality communication skills.	AM1
B5	Ethical - Strong professional and business ethics.	AM2
B6	Commitment - A focus on quality in all the tasks assigned.	AM2
B7	Continual development - Willingness to learn new processes, methods and technologies.	AM2
B8	Responsibility - Strong commitment and accountability and ability to apply independent judgement.	AM1
B9	Personal Values - Respect and tolerance of others.	AM2

B10	Ambassadorial - To be a role model of engineering practice and to promote engineering in order to sustain a pipeline of future talent	AM2
B11	Reflection - Evaluate outcomes of own performance across all duties.	AM1

