



POSITION DESCRIPTION

Position Title:	Controls Engineer/Senior Controls Engineer
Cluster / Business Unit / Division	Nuclear Science and Technology/ Australian Synchrotron
Section or Unit:	Controls & Scientific Computing Group
Classification:	Band 5/6 Linked Role
Job Family:	Engineering and Technical
Position Description Number:	PD-2638
Work Contract Type:	Technical
STEMM/NON-STEMM:	STEMM
STEMM CATEGORY:	Engineering

POSITION PURPOSE

The position enables scientific outcomes by delivering controls or Safety Systems solutions using PLCs through effective design, development, implementation and operational support of systems used in accelerator and beamline environment.

At a Senior Controls Engineer level, the position additionally applies specialist expertise to support complex system design, integration decisions and provide technical leadership to ensure robust, scalable and maintainable solutions.

ORGANISATIONAL ENVIRONMENT

ANSTO is a leading global nuclear science and technology organisation delivering world class research and expertise to benefit Australia and support a more sustainable future. Using nuclear science, we improve health, support industries, provide expert advice to government on nuclear technologies and help develop Australia’s nuclear workforce.

Nuclear Science and Technology (NST) incorporate ANSTO’s research, innovation, landmark research infrastructure and associated Platforms and capabilities. NST conducts research and development in relation to nuclear science and technology and connects people, transfers knowledge, and provides nuclear-based products and services for the benefit of Australia.

The Australian Synchrotron (AS) is a division within the Australian Nuclear Science and Technology Organisation (ANSTO) and one of the nation's premier science facilities that provides a vibrant focal point for researchers from Australia, NZ and further afield. The facility provides world-leading technical capability that delivers better and faster experimental techniques that enhance current fundamental and applied research. The facility promotes international collaboration to enable leading-edge R&D that will greatly benefit Australia and our regional neighbours.

The Controls and Scientific Computing function enables world-class synchrotron capabilities by delivering integrated control, automation and computing solutions that support the Australian Synchrotron’s scientific and operational objectives. This includes the development and operational support of beamline and accelerator systems using EPICS-based platforms, data acquisition, motion control systems, distributed controls systems and integration with instrumentation and associated systems across the facility. It also encompasses the delivery and support of equipment protection and personnel safety systems, as well as scientific computing platforms for data acquisition, processing and user interfaces that support experimental workflows in collaboration with beamline scientists. High-performance solutions are achieved through close collaboration with Engineering and Science teams, supported by the development of standards and specifications, engagement with external suppliers, and in-house design where suitable solutions are not available.

ACCOUNTABILITIES & RESPONSIBILITIES

Control System Engineer Key Accountabilities Band 5:

- Assist in the design, development and implementation activities related to control systems used on the Accelerator and Beamlines to provide functional and reliable systems that support the needs of the facility.
- Program, build or configure software used in the control or safety systems using defined engineering processes and procedures to provide functional and reliable systems that support the needs of the facility
- Perform test and integration activities for the software and hardware systems deployed in the facility to provide functional and reliable systems that support the needs of the facility.
- Participate in projects related to control or safety systems and provide engineering support to ensure timely delivery that meets expectations.
- Documentation for the assigned work inclusive of communication, decisions and technical reports.
- Provide operational support by troubleshooting, diagnosing and solving problems with installed systems in the facility to maintain reliable operations.
- Actively pursue learning, development, and collaboration activities related to the area of responsibility, in consultation with the line manager, to ensure Australian Synchrotron remains competitive internationally and fosters collaboration. Undertake additional duties as required and during period of leave of other staff.
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In addition to performing all Band 5 key accountabilities, the Band 6 position is also accountable for:

- Support the lifecycle management of system assets, including commissioning, preventative maintenance, asset tracking, performance monitoring, and continuous improvement throughout the operational life of the systems.
- Lead the conceptual and detailed design, development and implementation of control or safety systems across the facility or within the assigned area of responsibility to deliver functional and reliable systems within projects or operations that support the needs of the facility.
- Ensure engineering activities comply with system lifecycle practices including configuration management and change control, quality and testing standards, cybersecurity requirements, and functional safety standards (e.g., IEC 61508), where applicable.
- Develop and communicate procedures and work instructions related to controls or safety systems to ensure appropriate level of knowledge and skill is available to support key functions.
- Provide technical leadership and collaborate with cross-functional teams to deliver projects and support operational activities that contribute to the facility's strategic objectives and standards.
- Develop and maintain collaborative relationships with subject matter experts at other comparable facilities and within industry to ensure the Australian Synchrotron remains competitive internationally and fosters collaboration.
- Define and lead test and integration activities for the software and hardware systems deployed in the facility to ensure reliable operation.

DECISION MAKING

- Resolve operational issues affecting control or safety systems, including those that cause immediate disruption, to maintain reliable facility operations.
- Sequence, coordinate and prioritise work across assigned activities and multiple functions to meet operational and project requirements, ensuring effective integration and delivery
- Determine, and where required develop or adapt, design, implementation and testing approaches for control, automation or safety related systems in accordance with established engineering standards and guidelines, or where these may not fully apply.

- Specifying hardware components in accordance with established technical standards and system requirements.
- Influencing technical decisions, including input into resourcing, solution approaches and prioritisation, to support timely and effective delivery of outcomes.
- The levels of authority delegated to this position are those approved and issued by the Chief Executive Officer. All delegations will be in line with the ANSTO Delegation Manual AS-1682 (as amended or replaced).

KEY CHALLENGES

- Delivering control and automation solutions that meet strategic and operational objectives, while managing competing priorities, deadlines and stakeholder expectations.
- Maintaining awareness of developments in the controls or safety system related field and driving continuous improvement through the adoption of emerging technologies, practices and standards.
- Improving service quality, response times and delivery efficiency to support reliable facility operations.
- Maintaining effective communication and working relationships with clients, vendors, team members, engineers across disciplines and collaborators.
- Translating scientific requirements into practical control system solutions, and developing, applying and maintaining standardised approaches.
- Delivering solutions within operational constraints, including deployment during scheduled shutdown maintenance windows, requiring effective planning and availability.
- Making complex engineering decisions by considering factors such as fit for purpose, total cost of ownership, suitability of collaborators and agreements, team capability and system standardisation.

KEY RELATIONSHIPS

Who	Purpose
Internal	
Principal Scientists, Group Leaders, Mechanical/Electrical Engineers, Technicians, Controls Engineers (team)	- Regularly or more often to work collaboratively together on projects/provide advice and instructions on control or safety systems, priorities where higher-level input is required and to provide advice on technical feasibility/practicality on challenges relevant to their areas of responsibility
Scientists	- Frequently to discuss performance of control or safety systems and develop requirements for new systems
Procurement Department	- Liaise with procurement to support procurement activities as required
External	
Experts/colleagues at other facilities	- As required depending on requirements to maintain knowledge of technical developments at other facilities which may be relevant and transferrable. Seek and provide advice as required
Suppliers/contractors	- Monthly or as required to seek specialist services or advice or to purchase specialist equipment

POSITION DIMENSIONS

Staff Data	
Reporting Line	Reports to the relevant Manager within the AS-Controls and Scientific Computing function.
Direct Reports	Nil
Indirect Reports	Nil

Financial Data (2026/2027)

Revenue / Grants	Nil
Operating Budget	Nil
Staffing Budget	Nil
Capital Budget	Nil
Assets	Nil

Special / Physical Requirements

Location:	Clayton Working in different areas of designated site/campus as needed
Travel:	May be required travel to ANSTO sites from time to time May be required to travel both internationally and nationally
Physical:	Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer) Labour intensive physical requirements (sitting, standing, frequent manual handling up to 20kg) Standing for long periods Frequent movements (climbing, stooping, kneeling, crouching, crawling) Public speaking Wearing personal protective equipment for the handling of hazardous and/or radioactive materials
Radiation areas:	May be required to work in radiation areas under tightly regulated conditions Perform duties in an area where radioactive materials are handled under tightly controlled safety conditions Perform duties with and in an area where hazardous chemicals or materials are handled under tightly controlled safety conditions
Hours:	Willingness to work extended and varied hours based on operational requirements Shift work After hours work may be required for short and infrequent periods May be required to participate on an on-call roster
Clearance requirements:	Satisfy ANSTO Security and Medical clearance requirements
Linked Role:	Minimum 3 years or equivalent experience performing Band 5 accountabilities. Active and effective demonstration of ANSTO values and behaviours. The Transition from Band 5 to Band 6 is not automatic and requires a full written submission, in addition to the attached checklist, to demonstrate how the employee meets the requirements. Transition will only occur following approvals from Senior Manager, Controls and Computing.

Workplace Health & Safety

Specific role/s as specified in <u>AP- 2362</u> of the ANSTO WHS Management System	All Workers Other specialised roles identified within the guideline a position holder may be allocated to in the course of their duties
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ORGANISATIONAL CHART

On file

KNOWLEDGE, SKILLS AND EXPERIENCE

Band 5 Controls Engineer position:

1. A degree in Engineering or an equivalent tertiary qualification in relevant technical field.
2. Demonstrated understanding of control or safety-related systems, including integration exposure to motion control, PLC-based automation, data acquisition or real-time control systems used in scientific or industrial environments.
3. Demonstrated ability to program in one or more one programming language, with exposure to low level device or hardware interface programming and familiarity with software development environments (e.g. Python, C/C++, Linux-based systems or PLC programming environments).
4. Demonstrated experience working effectively in a technical team environment with an ability to communicate and collaborate with various technical groups, engineers, scientists and other technical specialists to gain accurate and relevant information.
5. Ability to follow engineering processes, standards and procedures related to automation and control systems / PLC based systems and to interpret engineering documentation (e.g. electrical schematics).
6. Ability to quickly understand scientific or technical concepts to a sufficient level to provide the required support.
7. Exposure to control, automation or motion control technologies such as PLC-based systems, embedded controls, instrumentation using industrial communication technologies.
8. Demonstrated values and behaviors that are exemplary and actively promote collaboration and high performance.

In addition, the Band 6 position Senior Control Engineer requires:

9. Demonstrated experience in designing, integrating and troubleshooting control or safety-related systems including integration of motion control, PLC-based automation, data acquisition and real-time control systems using industrial communication technologies (e.g. EtherCAT, PROFINET, OPC-UA, Modbus etc).
10. Ability to perform and document technical design reviews, to develop relevant engineering standards, procedures and work instructions, including the use of engineering design tools (e.g. AUTOCAD, Zuken E3, Altium or equivalent) to support controls and safety-related systems.
11. Demonstrated to work autonomously or with limited supervision, applying sound technical judgement to solve complex-engineering problems.
12. Demonstrated understanding of Australian and International standards relevant to controls or Safety-related systems (e.g. AS4024, IEC 61508 etc), and the ability to apply them in engineering design and risk assessments.
13. Experience with automation platforms and programming environments used in controls or safety control systems (e.g., EPICS, Tango, Omron Power PMAC, Siemens SIMATIC S7/TIA Portal, Schneider Modicon /Control Expert, Beckhoff, Pilz, etc).
14. Relevant certification in machine safety or functional safety and competency in applying safety principles to the design and implementation of safety-related control systems.
15. Knowledge and experience in functional safety and safe motion or robotic systems (e.g., Kuka, Stäubli) with application in safety-related control systems.
16. Familiarity with Agile development practices and collaboration tools (e.g., JIRA, Confluence) used to support engineering delivery and coordination.

VERIFICATION

This section verifies that the line manager and appropriate senior manager/executive confirm that this is a true and accurate reflection of the position.

Line Manager	Delegated Authority
Name: Alan NG Gaurav Acharya Navid Hamedi	Name: Paul Martin
Title: Manager, Control Systems Manager, Controls and Support Systems Manager, PLC	Title: Senior Manager, Controls and Computing
Signature:	Signature:
Date:	Date:

**Sr. Controls Engineer Linked Role (PD-2638)
Band 5 to Band 6 Transition Checklist**

Name:	
Commencement Date:	
Assessment Date:	

Note: Written submission demonstrating and justifying how the employee meets the requirements must also be attached.

Requirements for transition	Met Criteria
Demonstrated effective communication with cross-functional teams by preparing clear documentation, presented updates to broader audiences (as needed) and contributed to team meetings constructively.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Demonstrated effective coordination with key stakeholders to plan and estimate project or operational work packages accurately. Identified technical risks early and suggested basic mitigation strategies to minimize risks in the work package.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Demonstrated a solid understanding of system interdependencies/behaviour and had independently resolved moderate / complex technical issue/s by applying insights to enhance robustness and scalability.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Actively participated in design reviews and delivered a high-quality engineering work with minimal supervision with emphasis on maintainability and ease of operation.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Produced clear, complete documentation for designs, tests, implementation and alignment with team's expectations for traceability, compliance, and reusability.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Demonstrated taking initiative/s by identifying process inefficiencies and recommended changes to improve overall system reliability or gain operational efficiencies.	<input type="checkbox"/> Yes <input type="checkbox"/> No

Manager Recommendation:

I have reviewed the employee's competence in accordance with Linked Role PD-2638 and certify that the employee meets all requirements for transition and recommend transition from Band 5 to Band 6 be endorsed.

Attach written submission demonstrating and justifying how the employee meets each of the above requirements.

Name & Title:			
Signature:		Date:	

Senior Manager Assessment

I have assessed the submission and confirm that the employee meets all requirements for transition from Band 5 to Band 6.

Name & Title:			
Signature:		Date:	
Effective date of transition:			