

CAREER GUIDE FOR ELECTRONIC REPAIRERS, COMMERCIAL & INDUSTRIAL

SOC Code: 49-2094

Pay Band(s): 3 and 4 ([Salary Structure](#))

Standard Occupational Description: Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas.

Electronic Repairer positions in the Commonwealth are assigned to the following Roles in the [Electronics Career Group](#):

[Electronics Technician I](#)

[Electronics Technician II](#)

While Electronic Repairers within the Commonwealth are all located within the Electronics Career Group, individuals may want to pursue other opportunities within the Commonwealth depending upon individual training, education, knowledge, skills, abilities, and interests.

Other Career Group(s) that may be of interest are:

[Engineering Technology
Equipment Service and Repair
Computer Operations
Training and Instruction](#)

SKILLS, KNOWLEDGE, ABILITIES AND TASKS

(Technical and Functional Expertise)

Skills

Note: *The technical and functional skills listed below are based on general occupational qualifications for Electronic Repairer commonly recognized by most employers. Typically, you will not be required to have all of the skills listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.*

1. Determining causes of operating errors and deciding what to do about it.
2. Repairing machines or systems using the needed tools.
3. Understanding written sentences and paragraphs in work related documents.
4. Installing equipment, machines, wiring, or programs to meet specifications.
5. Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
6. Watching gauges, dials, or other indicators to make sure a machine is working properly.
7. Adjusting actions in relation to others' actions.
8. Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
9. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
10. Understanding the implications of new information for both current and future problem-solving and decision-making.

Knowledge

Note: The technical and functional knowledge statements listed below are based on general occupational qualifications for Electronic Repairer commonly recognized by most employers. Typically, you will not be required to have all of the knowledge listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.

The **Knowledge** of:

1. Machines and tools, including their designs, uses, repair, and maintenance.
2. Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

Abilities

Note: The technical and functional abilities listed below are based on general occupational qualifications for Electronic Repairer commonly recognized by most employers. Typically, you will not be required to have all of the abilities listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.

The **Ability** to:

1. Tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.
2. See details at close range (within a few feet of the observer).
3. Apply general rules to specific problems to produce answers that make sense.
4. Listen to and understand information and ideas presented through spoken words and sentences.
5. Communicate information and ideas in speaking so others will understand.
6. Read and understand information and ideas presented in writing.
7. Keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.
8. Quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
9. Speak clearly so others can understand you.
10. Arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).

Tasks

Note: The following is a list of sample tasks typically performed by Electronic Repairer. Employees in this occupation will not necessarily perform all of the tasks listed.

Tasks

1. Perform scheduled preventive maintenance tasks, such as checking, cleaning, and repairing equipment, to detect and prevent problems.
2. Examine work orders and converse with equipment operators to detect equipment problems and to ascertain whether mechanical or human errors contributed to the problems.
3. Set up and test industrial equipment to ensure that it functions properly.
4. Operate equipment to demonstrate proper use and to analyze malfunctions.
5. Test faulty equipment to diagnose malfunctions, using test equipment and software, and applying knowledge of the functional operation of electronic units and systems.

6. Repair and adjust equipment, machines, and defective components, replacing worn parts such as gaskets and seals in watertight electrical equipment.
7. Calibrate testing instruments and installed or repaired equipment to prescribed specifications.
8. Advise management regarding customer satisfaction, product performance, and suggestions for product improvements.
9. Inspect components of industrial equipment for accurate assembly and installation and for defects such as loose connections and frayed wires.
10. Study blueprints, schematics, manuals, and other specifications to determine installation procedures.

INTERESTED?

Like people, occupations have traits or characteristics. These characteristics give important clues about the nature of the work and work environment, and give you an opportunity to match your own personal interests to a specific occupation. When you choose a job in an occupation that matches your own interests you have taken an important step in planning a successful and rewarding career.

The occupation of Electronic Repairer has **Realistic** characteristics as described below:

Realistic — Realistic occupations frequently involve work activities that include practical, hands-on problems and solutions. They often deal with plants, animals, and real-world materials like wood, tools, and machinery. Many of the occupations require working outside, and do not involve a lot of paperwork or working closely with others.

LICENSURE, REGISTRATION, OR CERTIFICATION REQUIREMENTS

Generally this is not required for Electronic Repairer positions in state government. However some positions may require certification such as those maintaining nuclear gauges. These positions must be certified and maintain a current radiation safety officer's training course with a minimum of 100 hours of repair and operations using portable nuclear gauges.

Various organizations offer certification, including ACES International, the Consumer Electronics Association, the Electronics Technicians Association International, and the International Society of Certified Electronics Technicians. Repairers may specialize—in industrial electronics, for example. To receive certification, repairers must pass qualifying exams corresponding to their level of training and experience.

For information on careers and certification, contact any of the following organizations: ACES International: <http://www.acesinternational.org> , Consumer Electronics Association: <http://www.ce.org>, Electronics Technicians Association International <http://www.eta-sda.org/> and International Society of Certified Electronics Technicians: <http://www.iscet.org>.

Certification may enhance professional growth and career progression.

EDUCATIONAL, TRAINING, AND LEARNING OPPORTUNITIES

The Department of labor provides the following information:

Businesses and other organizations depend on complex electronic equipment for a variety of functions. Industrial controls automatically monitor and direct production processes on the factory floor. Transmitters and antennae provide communication links for many organizations. Electric power companies use electronic equipment to operate and control generating plants, substations, and monitoring equipment. The Federal Government uses radar and missile control systems to provide for the national defense and to direct commercial air traffic. These complex pieces of electronic equipment are installed, maintained, and repaired by electrical and electronics installers and repairers.

Knowledge of electrical equipment and electronics is necessary for employment. Many applicants gain this knowledge through programs lasting 1 to 2 years at vocational schools or community colleges, although some less skilled repairers may have only a high school diploma. Entry-level repairers may work closely with more experienced technicians who provide technical guidance.

Installers and repairers should have good eyesight and color perception in order to work with the intricate components used in electronic equipment. Field technicians work closely with customers and should have good communication skills and a neat appearance.

Experienced repairers with advanced training may become specialists or troubleshooters who help other repairers diagnose difficult problems. Workers with leadership ability may become supervisors of other repairers.

The State Council of Higher Education lists many Virginia educational institutions (community colleges) offering programs in electrical, electronics and engineering related technology on their web site: http://research.schev.edu/degreeinventory/inventory_2.asp?from=k12

COMMONWEALTH COMPETENCIES

Competencies are a set of identified behaviors, knowledge, skills, and abilities that directly and positively impact the success of employees and the organization. Competencies can be observed and measured. When consistently demonstrated, competencies make employees particularly effective in their work. Competencies help lay out a road map to career success. You can use the Commonwealth Competencies to help improve your individual performance by adopting behaviors that make high performing employees successful in their jobs. In this way, you can use the Commonwealth Competencies for your further professional development.

The Commonwealth Competencies are:

1. Technical and Functional Expertise
2. Understanding the Business
3. Achieving Results
4. Serving the Customer
5. Teamwork
6. Interpersonal and Communication Skills
7. Leadership and Personal Effectiveness

The above competencies may be applied to employees throughout the Commonwealth of Virginia. They can be rank-ordered by agencies and hiring managers to represent the needs of

a specific job. The rank ordering will change depending upon the occupation, an organization's priorities, the actual job requirements, and the supervisor's preferences.

Career success is both about what you do (applying your technical knowledge, skills, and ability) and how you do it (the consistent behaviors you demonstrate and choose to use) while interacting and communicating with others. Hopefully, by studying the Commonwealth competencies, identifying your developmental opportunities, and working to refine your own competence, you can take charge of your career!

For additional information about the **Commonwealth Competencies** go to: http://jobs.state.va.us/cc_planningctr.htm. For the competencies, we first list the competencies and then define each. Finally, we list competency indicators; to describe what successful performance looks like.

COMMONWEALTH CAREER PATH

Career opportunities in the Commonwealth are not limited to moving “up” to the next highest role and pay band, changing positions, or to becoming a supervisor. That’s because most roles describe a broad group of occupationally related positions that perform a range of work that requires increased knowledge and skills. For that reason, Commonwealth roles describe the career paths within the same or higher-level role for the same or different Career Group. The broad salary range and the Commonwealth’s pay practices provide flexibility in recognizing career development and advancement. ([Salary Structure](#))

For example: **Electronic Repairer**

PAY BAND	PRACTITIONER ROLES
3	Electronics Technician I
4	Electronics Technician II

PAY BAND	MANAGER ROLES
5	Electronics Manager

Sample Career Path

Electronics Technician I

The Electronic Technician I role provides career tracks for electronic technicians performing electronic installation, service, and repair duties ranging from entry-level to journey-level. Responsibilities include installing, repairing, servicing, adjusting, calibrating, fine-tuning, and testing devices, circuitry and components on electronic and electronic communications equipment operating primarily on the basis of electric or electronic principles.

Electronics Technician II

The Electronic Technician II role provides career tracks for electronic technicians who perform duties ranging from advanced level and highly skilled to supervisory level. Technicians are responsible for functioning with a high-degree of independence in the repair, installation, and service of a wide variety (e.g. receivers, broadcasting, transmitters, radar sets, traffic control devices and satellite dishes) of electronic and electromechanical components and circuitry; or

responsible for providing technical leadership and oversight of technicians in planning, scheduling and inspecting the work of others.

Electronics Manager

The Electronics Manager role provides career tracks for managers responsible for the design, installation, modification, and repair services of a wide-variety of electrical, electronic and electromechanical communications equipment and components or an entire system. Employees provide oversight to project management and implementation schedules.

ADDITIONAL OCCUPATIONAL INFORMATION CAN BE FOUND AT:

O*NET (Occupational Information Network)

http://online.onetcenter.org/gen_search_page

Virginia Employment Commission

<http://www.alex.vec.state.va.us/>

Career One Stop

<http://www.careeronestop.org/>

Virginia Career Resource Network

<http://www.vacrn.net/>