



UEERA0097

## Overview of Daikin VRV System

Take your HVAC skills to the next level with the Daikin VRV Systems Course, delivered in partnership with Alpha Technical Training (RTO 45289). Designed for licensed technicians, this program blends interactive online learning with hands-on training at Daikin's cutting-edge Training Academies – so you gain expertise without long days off the tools.

You'll learn to:

- Design commercial HVAC systems with Daikin's Xpress software
- Install, commission, and optimise VRV systems
- Diagnose and repair complex inverter and refrigerant faults
- Test and evaluate key system components with real-world case studies

Complete the nationally accredited UEERA0097 unit and earn a Statement of Attainment plus Daikin certification – proof you're among the best in the business.

Train with the best. Become the best.



## Application

This unit covers the skills and knowledge needed to safely and effectively install, commission, service, and maintain variable refrigerant flow (VRF) air conditioning systems.

It involves finding and using the right data and schematics; installing system components, pipework, accessories, and controls; commissioning the system so it runs at the required design conditions; finding and fixing faults; and carrying out maintenance work.

VRF systems are mostly used in commercial buildings. They have one or more outdoor units connected to multiple indoor units. Each indoor unit usually has its own metering device and shares the same pipework system. These systems can be either heat pump or heat recovery types. Heat pump systems make all indoor units run in the same mode (either heating or cooling), while heat recovery systems let each indoor unit run in a different mode (heating or cooling) at the same time by using a branch box.

Refrigeration and air conditioning technicians will use the skills and knowledge in this unit when installing, commissioning, and servicing VRF systems.

Because this work involves refrigeration and air conditioning equipment that could release fluorocarbon refrigerant during decanting, manufacturing, installation, commissioning, servicing, maintenance, or decommissioning, you must hold a current national Trainee or Full Refrigerant Handling Licence.

Licensing regulations apply to the skills and knowledge in this unit. If you don't hold the required licence or permit, you must have a relevant training contract, such as an Australian Apprenticeship.

Other rules may apply in some states or territories, especially for refrigeration, air conditioning, and electrical work. All training and workplace activities must also follow work health and safety (WHS) or occupational health and safety (OHS) requirements.

## Pre-requisite unit

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UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

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UEERA0051 Install, commission, service and maintain air conditioning systems

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Competency field	Unit sector
Refrigeration and air-conditioning	Electrotechnology

## Elements and performance criteria

Elements	Performance criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work on variable refrigerant flow (VRF) air conditioning systems	1.1 WHS/OHS risk control measures and procedures for carrying out the work are obtained and implemented in accordance with workplace procedures and regulatory requirements
	1.2 Work details are determined from documentation and/or supervisor to establish scope of work to be completed in accordance with workplace procedures
	1.3 Relevant manufacturer specifications and worksite plans are interpreted and incorporated in work planning
	1.4 Components, piping, accessories, controls and consumables for the work are obtained and checked against job requirements in accordance with Australian Standards and codes of practice
	1.5 Tools, equipment and testing devices to complete work are obtained and checked for operational safety in accordance with workplace procedures
2 Install VRF air conditioning systems	2.1 The location and orientation of branching and support of pipe work is determined and laid out in accordance with system design
	2.2 Major components are securely mounted in the locations identified by the documentation or the supervisor in accordance with workplace procedures and regulatory requirements
	2.3 Refrigerant pipework and associated components are installed and tube cleanliness is maintained at all times in accordance with workplace procedures, Australian Standards and manufacturer specifications
	2.4 Condensate pipework is installed and tested in accordance with design, Australian Standards and manufacturer specifications
	2.5 Communication wiring is checked to ensure it conforms to manufacturer circuit diagram, specifications and Australian Standards
	2.6 Pressure testing of the installed components and pipe work is conducted to the required level for the type of refrigerant being used in accordance with relevant Australian Standards, codes of practices and workplace procedures
	2.7 Leaks are located and rectified employing appropriate methods in accordance with relevant Australian Standards, codes of practices and workplace procedures
	2.8 Air conditioning system is evacuated to remove moisture and other contaminants in accordance with relevant Australian Standards, codes of practices and workplace procedures
	2.9 Vacuum drop test is carried out to verify all moisture and other contaminants have been removed from the system in accordance with relevant Australian Standards, codes of practices and workplace procedures
3 Commission VRF air conditioning systems	3.1 Extra refrigerant charge quantity is documented in accordance with Australian Standards and manufacturer specifications
	3.2 Measurements are obtained using manufacturer diagnostic tools and recorded to confirm system operation is in accordance with the system's design and manufacturer specifications
	3.3 Measurements are obtained and recorded to confirm that operating voltage and current are within manufacturer specifications

4	Locate and rectify faults on VRF air conditioning systems	4.1	Fault diagnosis processes are carried out in accordance with manufacturer processes and specifications, relevant Australian Standards, codes of practices and workplace procedures
		4.2	Required repairs are identified and reported in accordance with manufacturer processes, relevant Australian Standards, codes of practices and workplace procedures
		4.3	Routine maintenance requirements are identified in accordance with relevant Australian Standards and workplace procedures
5	Complete work and report activities	5.1	WHS/OHS risk control measures continue to be applied in accordance with workplace procedures and regulatory requirements
		5.2	Worksite and equipment are cleaned and made safe in accordance with workplace procedures
		5.3	Required documentation is completed in accordance with relevant regulations, Australian Standards and codes of practice
		5.4	Supervisor is notified of task completion in accordance with workplace procedures

## Assessment requirements

### Performance evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- installing and commissioning multi head variable refrigerant flow (VRF) air conditioning systems in accordance with manufacturer specifications
- using manufacturer diagnostic tool to assist in finding two of the following faults on a variable refrigerant flow air conditioning system (Note: one fault to be applied to the VRF system on each occasion):
  - contaminants in the system
  - incorrect refrigerant charge
  - faulty pressure and temperature sensors
  - communication errors
  - faulty fan motors
  - faulty refrigerant metering device (RMD)
  - insufficient airflow
- completing required documentation and record keeping
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- applying relevant manufacturer specifications, Australian Standards, regulation and codes of practice.

## Knowledge evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- VRF air conditioning systems including:
  - different types, their components and application
  - operating principles (cooling, heat pump and heat recovery)
  - control principles
  - operation in the heating and cooling cycles
  - accessing manufacturer specifications and instructions
- VRF pipework including:
  - refrigerant pipe layout and installation requirements including:
    - pipe diameter, length and wall thickness
    - pipe branch orientation and connections
    - expansion and contraction of pipework
    - piping support
  - condensate and traps
  - technique for condensate flow testing
- VRF wiring including:
  - separation of power and communications cabling
  - communication wiring requirements and component addressing
- requirements for branch box installation location
- requirements for installation of multiple outdoor VRF units
- working with refrigerants in VRF systems including:
  - checking and adding charge of refrigerant
  - procedure to check system valves are open during pressure test and evacuation
  - refrigerant leakage concentration levels permitted in enclosed spaces
- symptoms of typical faults and repair techniques including:
  - contaminants in the system
  - incorrect refrigerant charge
  - faulty pressure and temperature sensors
  - communication errors
  - faulty electronically commutated (EC) motors
  - faulty refrigerant metering device (RMD)
  - insufficient airflow
- maintenance requirements specific to VRF systems
- commissioning requirements specific to VRF systems
- manufacturer programs and tools including:
  - built-in self-commission test
  - plug-in diagnostic tools.

## Knowledge evidence

1. Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.
2. Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.
3. Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.
4. Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
5. Resources for assessment must include access to:
  - relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
  - applicable documentation, including workplace procedures, Australian Standards, equipment specifications, regulations, codes of practice and operation manuals.