



ESIE17-06

Service Manual

VRV4WC+

RWEYQ8, 10,14 T9Y1B



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Table of contents

Part 1. Introduction	9
1.1. Version log	9
1.2. Safety precautions	10
1.2.1. Meaning of symbols	10
1.2.2. Warnings	10
1.2.3. Cautions	12
1.2.4. Information	12
1.3. General operation	13
1.4. How to use	16
1.4.1. Interactive information flow	16
1.4.2. Parts of the book	17
1.4.2.1. The introduction chapter	17
1.4.2.2. The troubleshooting chapter	17
1.4.2.3. The repair chapter	17
1.4.2.4. The maintenance chapter	17
1.4.2.5. Appendices	17
1.4.3. Contact information	17
Part 2. Troubleshooting	19
2.1. Error codes check	19
2.1.1. Error codes via remote controller	19
2.1.1.1. Error codes via wired remote controller BRC1E	19
2.1.1.2. Error codes via wireless remote controller BRC7	21
2.1.2. Error codes via outdoor unit	24
2.1.2.1. How to retrieve error codes	24
2.1.2.2. How to reset error codes	25
2.1.2.3. History of error codes and warnings	26
2.2. Error code based troubleshooting	27
2.2.1. Error code BS and outdoor	28
2.2.2. Error code indoor units	35
2.2.3. Error code VRV IV-Water cooled unit	37
2.2.3.1. "E2" – Earth leakage detection	37
2.2.3.2. "E3" – Discharge pressure abnormality	37
2.2.3.3. "E4" – Suction pressure abnormality	38
2.2.3.4. "E5" – Compressor motor lock	39
2.2.3.5. "E9" – Electronic expansion valve abnormality	40
2.2.3.6. "F3" – Discharge pipe temperature abnormality	41
2.2.3.7. "F4" – Wet operation caution	42
2.2.3.8. "F6" – Refrigerant overcharge detection during test-run	42
2.2.3.9. "H3" – Discharge pressure switch abnormality	43
2.2.3.10. "H9" – Air temperature abnormality	44
2.2.3.11. "HJ" – Faulty watercircuit	44
2.2.3.12. "J3" – Discharge temperature abnormality	45
2.2.3.13. "J4" – Gas temperature PHE-H ₂ O abnormality	45
2.2.3.14. "J5" – Suction accumulator inlet temperature abnormality	46
2.2.3.15. "J6" – Liquid Sub-cool heat-exchanger temperature	46
2.2.3.16. "J7" – Liquid temperature abnormality	47
2.2.3.17. "J9" – Purge receiver + gas out SCHEX temperature abnormality	47
2.2.3.18. "JA" – High pressure sensor abnormality	48
2.2.3.19. "JC" – Low pressure sensor abnormality	48
2.2.3.20. "L1" – Main board abnormality	49
2.2.3.21. "L2" – Power Supply quality abnormality	49
2.2.3.22. "L5" – Output overcurrent detection	50
2.2.3.23. "L8" – Inverter overcurrent	51
2.2.3.24. "L9" – Stall prevention	51
2.2.3.25. "LC" – Transmission system abnormality	52

2.2.3.26. "P1" – Ripple DC voltage diode module to power transistors	52
2.2.3.27. "P4" – Overheat power module	53
2.2.3.28. "PJ" – Capacity setting mismatch inverter board	53
2.2.4. System	54
2.2.4.1. "U0" – Refrigerant shortage	54
2.2.4.2. "U1" – Reverse phase or open phase	55
2.2.4.3. "U2" – DC voltage DM <-> PM not permanent available	55
2.2.4.4. "U3" – Test run failed	56
2.2.4.5. "U4" – Transmission abnormality between outdoor and indoor unit	56
2.2.4.6. "U7" – Transmission between systems abnormality	57
2.2.4.7. "U9" – Systems abnormality	58
2.2.4.8. "UF" – Wiring and piping mismatch	59
2.2.4.9. "UH" – Auto-address failure	60
2.2.5. Others	60
2.3. Symptom based troubleshooting	61
2.3.1. None of the units operate	62
2.3.2. Operation sometimes stops	63
2.3.3. Some indoor units do not operate	63
2.3.4. Equipment operates but does not cool or does not heat	63
2.3.5. Large operation noise and vibration	64
2.4. Component checklist	66
2.4.1. VRV IV-Water cooled unit	67
2.4.1.1. 4-way valve	67
2.4.1.2. AC fan motor inverter cooling	70
2.4.1.3. Thermistor value-read-out	72
2.4.1.4. High pressure switch	73
2.4.1.5. High pressure sensor S1NPH	74
2.4.1.6. Low pressure sensor S1NPL	76
2.4.1.7. Inverter board A3P	78
2.4.1.8. Main board A1P	82
2.4.1.9. Thermistors	83
2.4.1.10. Compressor	87
2.4.1.11. Electronic expansion valve	89
2.4.2. System	90
2.4.3. Others	90
2.5. Other capacity range	91

Part 3. Repair **93**

3.1. Refrigerant repair procedures	93
3.1.1. Refrigerant piping handling	93
3.1.2. Refrigerant recovery procedure	94
3.1.2.1. Setup without BS units	95
3.1.2.2. Setup including BS units	96
3.1.3. Preparation for repair	97
3.1.3.1. Setup without BS units	98
3.1.3.2. Setup including BS units	99
3.1.4. Piping repair procedures	99
3.2. Service tools	100
3.3. Unit specific repair procedures	101
3.3.1. Indoor unit	101
3.3.2. RWEYQ-T9	102
3.3.2.1. Basic removal	102
3.3.2.2. Replacing thermistor	110
3.3.2.3. Replacing 4-way valve body	111
3.3.2.4. Replacing 4-way valve coil	113
3.3.2.5. Replacing compressor	114
3.3.2.6. Replacing oil separator	117
3.3.2.7. Replacing crankcase heater	119
3.3.2.8. Replacing AC fan inverter cooling	120
3.3.2.9. Replacing expansion valve body	121

3.3.2.10. Replacing expansion valve coil	122
3.3.2.11. Replacing high pressure sensor	123
3.3.2.12. Replacing high pressure switch	124
3.3.2.13. Replacing solenoid valve	125
3.3.2.14. Replacing solenoid valve coil	127
3.3.2.15. Replacing low pressure sensor	128
3.3.2.16. Replacing liquid receiver	129
3.3.2.17. Replacing accumulator	131
3.3.2.18. Replacing plate heat exchanger H ₂ O	133
3.3.2.19. Replacing heat exchanger inverter cooling	135
3.3.2.20. Replacing reactor	137
3.3.2.21. Replacing transformer	138
3.3.2.22. Replacing inverter board A3P	139
3.3.2.23. Replacing main PCB A1P	141
3.3.2.24. Replacing noise filter PCB A2P	144
3.3.2.25. Replacing SUB PCB A4P	146
3.3.2.26. Replacing Adapter PCB A8P	147
3.3.3. Branch Selector (BS) box	148
3.3.3.1. Replace control board BS box	148
3.3.3.2. Replacing expansion valve coil BS box	149

Part 4. Maintenance 151

4.1. Indoor unit	151
4.1.1. General maintenance indoor unit	151
4.2. RWEYQ-T	152
4.2.1. General maintenance RWEYQ-T	152

Part 5. Appendix 153

5.1. Field setting	155
5.1.1. RWEYQ-T default mode 2 settings	155
5.2. Detailed information setting mode	156
5.2.1. Indoor unit	156
5.2.2. RWEYQ-T9 field settings overview mode1 & 2	157
5.2.3. Remote controller	158
5.3. Wiring diagram	159
5.3.1. RWEYQ-T9Y1B (380~415V)	159
5.3.2. Field wiring	160
5.4. Piping diagram	161
5.5. Component overview of unit	162
5.6. Product specific information	163
5.6.1. Component checklist	163
5.6.1.1. How to activate inverter test	163
5.6.1.2. Component checklist RWEYQ-T9Y1B	163
5.6.2. Safety devices	164
5.6.2.1. Drop control	164
5.6.2.2. Forced Stop	164
5.6.3. Control range	165
5.6.3.1. Compression operation range	165
5.6.4. Performance Characteristics	166
5.7. Switch box	167
5.7.1. Switch Box RWEYQ-T9Y1B	167
5.8. Branch Selector (BS) box	168
5.8.1. BS1Q10A, BS1Q16A, BS1Q25A	168
5.8.2. BS4Q14A	168
5.8.3. BS6Q14A	169

5.8.4. BS8Q14A	169
5.8.5. BS10Q14A	170
5.8.6. BS12Q14A	170
5.8.7. BS16Q14A	171
5.9. Field information report	172

List of figures

Figure 1-1: VRV4WC+ heat-pump application	14
Figure 1-2: VRV4WC+ heat-recovery application	15
Figure 2-3: Inverter board transistor/diode check	79
Figure 2-4: Compressor motor checking method	88
Figure 3-1: Removing the main front plate	102
Figure 3-2: Removing the PHE front plate	103
Figure 3-3: Removing the top plate	104
Figure 3-4: Removing the left side plate	105
Figure 3-5: Removing the right side plate	106
Figure 3-6: Lowering the switch box	107
Figure 3-7: Opening the switch box	108
Figure 3-8: Removing the compressor jacket	109
Figure 3-9: Replacing a thermistor	110
Figure 3-10: Removing the 4-way valve body	112
Figure 3-11: Removing the 4-way valve coil	113
Figure 3-12: Removing the compressor	115
Figure 3-13: Removing the oil separator	118
Figure 3-14: Removing the crankcase heater	119
Figure 3-15: Removing the AC fan inverter cooling	120
Figure 3-16: Removing the expansion valve	121
Figure 3-17: Removing expansion valve coil	122
Figure 3-18: Removing high pressure sensor	123
Figure 3-19: Removing high pressure switch	124
Figure 3-20: Removing the solenoid valve body	126
Figure 3-21: Removing the solenoid valve coil	127
Figure 3-22: Removing low pressure sensor	128
Figure 3-23: Removing the liquid receiver	130
Figure 3-24: Removing the accumulator	132
Figure 3-25: Removing the plate heat exchanger	134
Figure 3-26: Removing the heat exchanger inverter cooling	136
Figure 3-27: Removing the reactor	137
Figure 3-28: Removing the transformer	138
Figure 3-29: Removing the inverter board A3P	140
Figure 3-30: Removing the main PCB A1P	142
Figure 3-31: Removing the noise filter PCB A2P	145
Figure 3-32: Removing the SUB PCB A4P	146
Figure 3-33: Removing the Adapter PCB A8P	147
Figure 3-34: Removing the control board PCB (e.g. for BS box BS4Q14A)	148
Figure 3-35: Removing expansion valve coil (e.g. for BS box BS4Q14A)	149
Figure 5-1: Check method Wiring BS-Q14A	156
Figure 5-2: Wiring diagram	159
Figure 5-3: Piping diagram RWEYQ-T9Y1B	161

Figure 5-4: Component overview RWEYQ-T9Y1B / TATJU-/TAYDU	162
Figure 5-5: Performance Characteristics	166
Figure 5-6: Switch box - RWEYQ-T9Y1B	167
Figure 5-7: BS box - BS1Q10A, BS1Q16A, BS1Q25A	168
Figure 5-8: BS box - BS4Q14A	168
Figure 5-9: BS box - BS6Q14A	169
Figure 5-10: BS box - BS8Q14A	169
Figure 5-11: BS box - BS10Q14A	170
Figure 5-12: BS box - BS12Q14A	170
Figure 5-13: BS box - BS16Q14A	171

Part 1. Introduction

This part contains the following chapters:

Version log.....	9
Safety precautions.....	10
General operation.....	13
How to use	16

1.1. Version log

Version code	Description	Date
ESIE17-06	Document release	30/10/2017

1.2. Safety precautions

The precautions described in this document cover very important topics, follow them carefully.

All activities described in the service manual must be performed by an authorized person.

If you are not sure how to install, operate or service the unit, contact your dealer.

In accordance with the applicable legislation, it might be necessary to provide a logbook with the product containing at least: information on maintenance, repair work, results of tests, stand-by periods, ...

Also, at least, following information must be provided at an accessible place at the product:

- Instructions for shutting down the system in case of an emergency
- Name and address of fire department, police and hospital
- Name, address and day and night telephone numbers for obtaining service

In Europe, EN378 provides the necessary guidance for this logbook.

1.2.1. Meaning of symbols

	WARNING Indicates a situation that could result in death or serious injury.
	WARNING: RISK OF ELECTROCUTION Indicates a situation that could result in electrocution.
	WARNING: RISK OF BURNING Indicates a situation that could result in burning because of extreme hot or cold temperatures.
	WARNING: RISK OF EXPLOSION Indicates a situation that could result in explosion.
	WARNING: RISK OF POISONING Indicates a situation that could result in poisoning.
	WARNING: RISK OF FIRE Indicates a situation that could result in fire.
	CAUTION Indicates a situation that could result in equipment or property damage.
	INFORMATION Indicates useful tips or additional information.

1.2.2. Warnings

	WARNING Improper installation or attachment of equipment or accessories could result in electric shock, short-circuit, leaks, fire or other damage to the equipment. Only use accessories, optional equipment and spare parts made or approved by Daikin.
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	WARNING Make sure installation, testing and applied materials comply with applicable legislation (on top of the instructions described in the Daikin documentation).
	WARNING Make sure the work site environment is clean and safe to work in. Beware of spilled fluids, like water, oil or other substances. Protect bystanders from injury and property from possible damage cause by service works.
	WARNING Wear adequate personal protective equipment (protective gloves, safety glasses,...) when installing, maintaining or servicing the system.
	WARNING Tear apart and throw away plastic packaging bags so that nobody, especially children, can play with them. Possible risk: suffocation.
	WARNING Do NOT touch the air inlet or aluminium fins of the unit.
	WARNING <ul style="list-style-type: none"> Do NOT place any objects or equipment on top of the unit. Do NOT sit, climb or stand on the unit.
	WARNING During tests, NEVER pressurize the product with a pressure higher than the maximum allowable pressure (as indicated on the nameplate of the unit).
	WARNING <ul style="list-style-type: none"> Never mix different refrigerants or allow air to enter the refrigerant system. Never charge recovered refrigerant from another unit. Use recovered refrigerant only on the same unit where it was recovered from, or have it recycled at a certified facility.
	WARNING: RISK OF FIRE <ul style="list-style-type: none"> When reconnecting a connector to the PCB, do not apply force or damage the connector or the connector pins on the PCB.
	WARNING: RISK OF BURNING <ul style="list-style-type: none"> Do NOT touch the refrigerant piping, water piping or internal parts during and immediately after operation. It could be too hot or too cold. Give it time to return to normal temperature. If you must touch it, wear protective gloves. Do NOT touch any accidental leaking refrigerant.
	WARNING Always recover the refrigerants. Do NOT release them directly into the environment. Use a recovery pump to evacuate the installation. Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks: <ul style="list-style-type: none"> Excessive refrigerant concentrations in a closed room can lead to oxygen deficiency. Toxic gas may be produced if refrigerant gas comes into contact with fire. Where applicable, pump down the system and close the service valve, before leaving the site if leak was not repaired, to avoid further leaking of the refrigerant.
	WARNING: RISK OF ELECTROCUTION <ul style="list-style-type: none"> Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts. Where applicable, stop the equipment's operation first and allow (refrigerant) pressure to equalize, before turning OFF the power. Disconnect the power supply for more than 1 minute, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage must be less than 50 V DC before you can touch electrical components. For the location of the terminals, refer to "Wiring diagram" on page 159. Do NOT touch electrical components with wet hands. Do NOT leave the unit unattended when the service cover is removed. Protect electric components from getting wet while the service cover is opened.

	<p>WARNING</p> <ul style="list-style-type: none"> Only use copper wires. All field wiring must be performed in accordance with the wiring diagram and installation manual supplied with the product. If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires may cause an electrical shock, excessive heat generation or fire. Secure all terminal connections and provide proper routing for cables, both inside and outside the switchbox. NEVER squeeze bundled cables and make sure they do not come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections. Make sure to check the earth wiring. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Improper earth wiring may cause electrical shock. Make sure to use a dedicated power circuit. NEVER use a power supply shared by another appliance. Make sure to check the required fuses and/or circuit breakers before starting works.
	<p>WARNING</p> <ul style="list-style-type: none"> After finishing the electrical work, confirm that each electrical component and terminal inside the electrical components box is connected securely. Make sure all covers are closed before starting the unit again.

1.2.3. Cautions

	<p>CAUTION</p> <p>Provide adequate measures to prevent that the unit can be used as a shelter by small animals. Small animals that make contact with electrical parts can cause malfunctions, smoke or fire.</p>
	<p>CAUTION</p> <ul style="list-style-type: none"> Make sure water quality complies with EU directive 98/83 EC. Check the system for leaks after each repair/modification of the water side. Check drainage system(s) after repairs. Be careful when tilting units as water may leak.

1.2.4. Information

	<p>INFORMATION</p> <p>Make sure refrigerant piping installation complies with applicable legislation. In Europe, EN378 is the applicable standard.</p>
	<p>INFORMATION</p> <p>Make sure the field piping and connections are not subjected to stress.</p>

1.3. General operation

- VRV IV-Water-cooled unit (1) is typically used for cooling or heating in commercial applications where local restrictions do not allow outdoor A/C equipment to be visible, or when the building does not offer place to install the normal air cooled VRV outdoor unit.
- When the VRV IV-Water-cooled unit is connected without BS boxes (BS = Branch selector), the system operates like a heat-pump unit; all indoor units (3) operate in the same mode (cooling or heating). Refer to figure 1-1 on page 14.
- When the VRV IV-Water-cooled unit is connected via BS boxes (2) to indoor units (3), the system operates like a heat-recovery system: indoor unit(s) at each BS box can operate in cooling or heating individually. Refer to figure 1-2 on page 15.
- VRV IV-Water-cooled unit contains a compressor, and a water cooled plate heat-exchanger instead of the air cooled heat-exchanger.
- VRV IV-Water-cooled unit also contains the inverter driven compressor and the control board.
- The inverter circuit dissipates heat. By field setting [2-74] (see table RWEYQ-T - mode 2 (Field setting mode)) you can set the maximum air temperature allowed in the plant room. When the room temperature exceeds the set temperature, the internal built in evaporator will cool down air discharged through the inverter board back panel (zero energy dissipation function).
- At the water inlet of the plate heat-exchanger (4) of the VRV IV-Water-cooled unit, the standard supplied water filter (5) must be installed.
- Local installed water circuit needs to provide the possibility to:
 - Dissipate heat (example dry-cooler) (6) when the plate heat-exchanger is set to condenser.
 - Absorb heat (example boiler) (7) when the plate heat-exchanger is set to evaporator.
 - The control (8) to switch between heat dissipation or heat source needs to be provided locally.
 - Sufficient water volume (9) to allow control of VRV IV-Water-cooled unit and local control to adjust operation according to the water temperature setting.
 - By field setting [2-50] (see table RWEYQ-T - mode 2 (Field setting mode)), it is possible to use VRV IV-Water-cooled unit in "geothermal" application:
use ground source (secondary water loop into ground). In this case it is essential to use a glycol solution in the primary circuit (including plate heat-exchanger of VRV IV-Water-cooled unit).
The pump will need to offer higher water flow and higher pressure drop. Refer to pressure drop data in "[Performance Characteristics](#)" on page 166.
 - To easily inspect the operation conditions of the system, it is highly recommended to provide:
 - Gauges (10) at the plate heat-exchanger to see pressure drop
= indication of flow rate and restricting filter or plate heat-exchanger.
 - Temperature indicators (11) to show the temperature inlet and outlet
= indication of flow rate and operation range equipment.
- The water flow rate through the plate heat-exchanger can be a fixed flow or variable water flow rate. The change of water flow rate in function of load can be covered by (local supplied) inverter pump, or/and variable water flow rate by (local supplied) water modulating valve. The control VRV IV-Water-cooled unit offers an output signal 2 & 10 DCV output by the control. The selection for variable water flow (pump or/and valve) is chosen by changing field setting [2-24] (see table RWEYQ-T - mode 2 (Field setting mode)).
- The VRV IV-Water-cooled unit has 3 refrigerant pipe connections:
 - Refer to figure 1-1 on page 14.
Without BS boxes use the HP/LP gas pipe (left) (13) + liquid (right) (14) towards the optional refnet(s) towards indoor unit(s).
 - Refer to figure 1-2 on page 15.
With BS boxes use the 3 connections through refnets to the BS units; HP/LP gas pipe (left) (13) + liquid (right) (14) + suction (15). From the BS box, gas and liquid pipe is connected towards indoor unit(s).

- In cooling mode:
 - The compressor capacity step is controlled based on evaporation temperature. Range of frequency output, see "Control range" on page 165.
 - The plate heat-exchanger is used as condenser.
- In heating mode:
 - The compressor capacity step is controlled based on condensing temperature. Range of frequency output, see "Control range" on page 165.
 - The plate heat-exchanger is used as evaporator.

Figure 1-1: VRV4WC+ heat-pump application

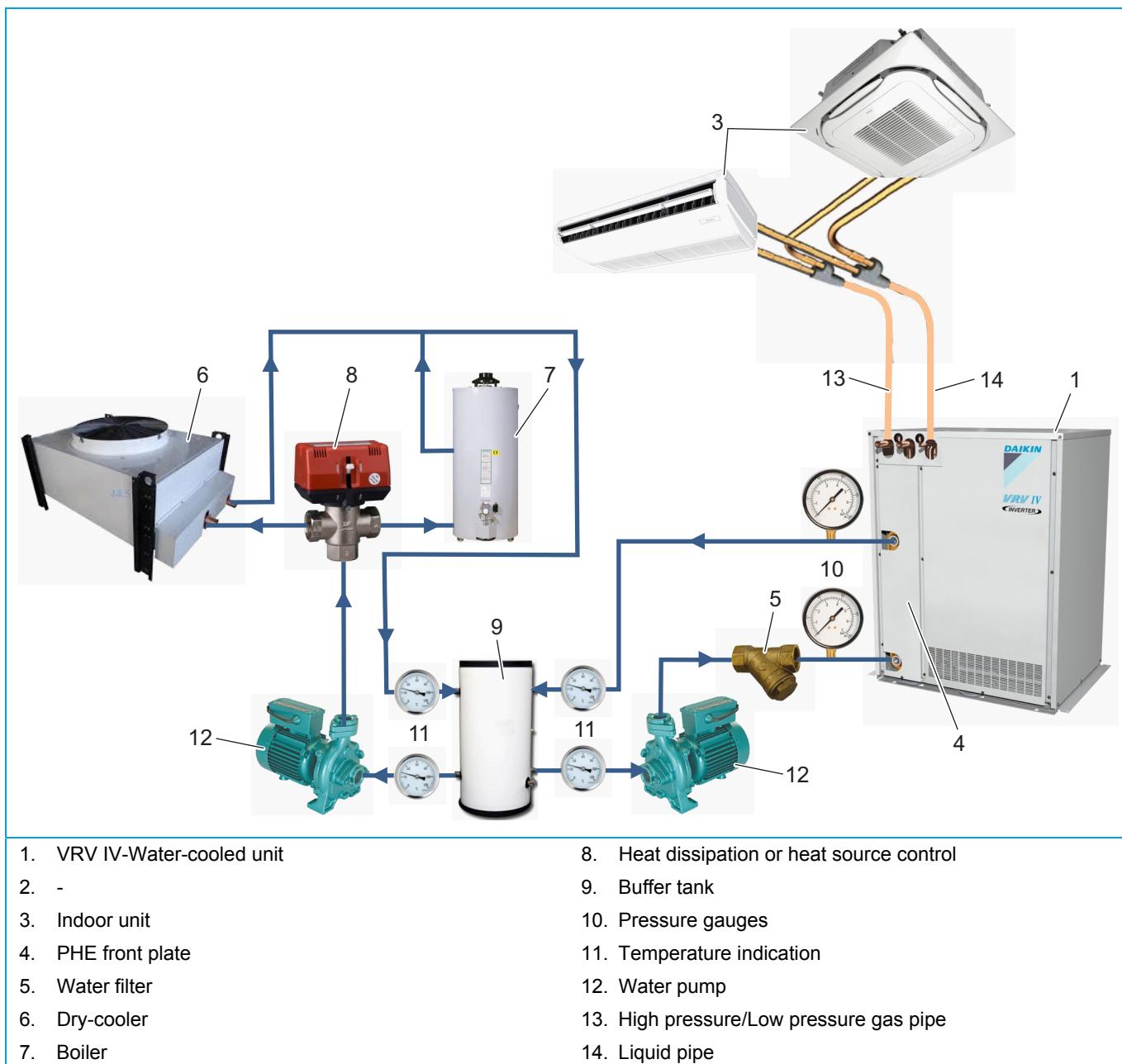
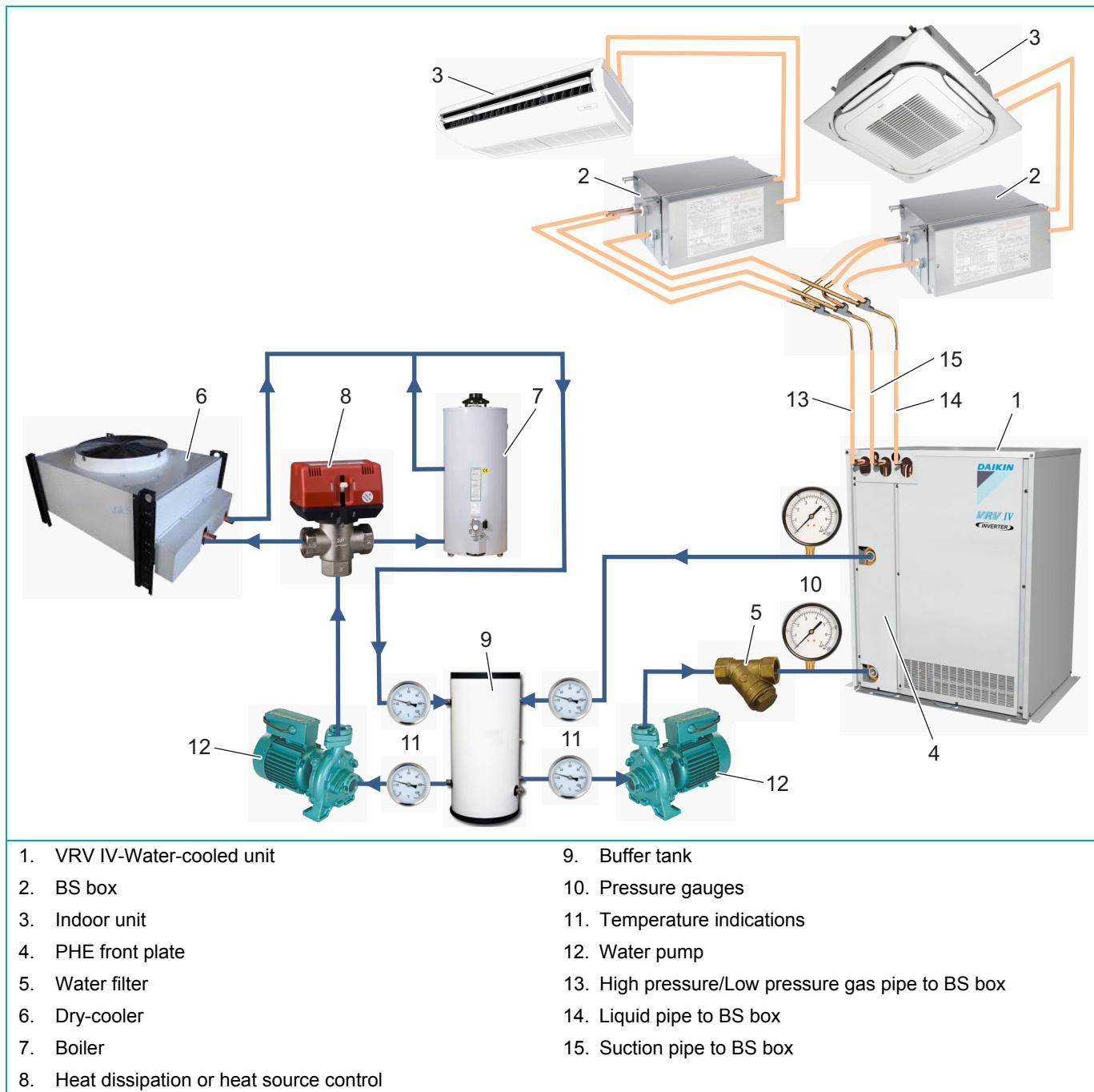


Figure 1-2: VRV4WC+ heat-recovery application

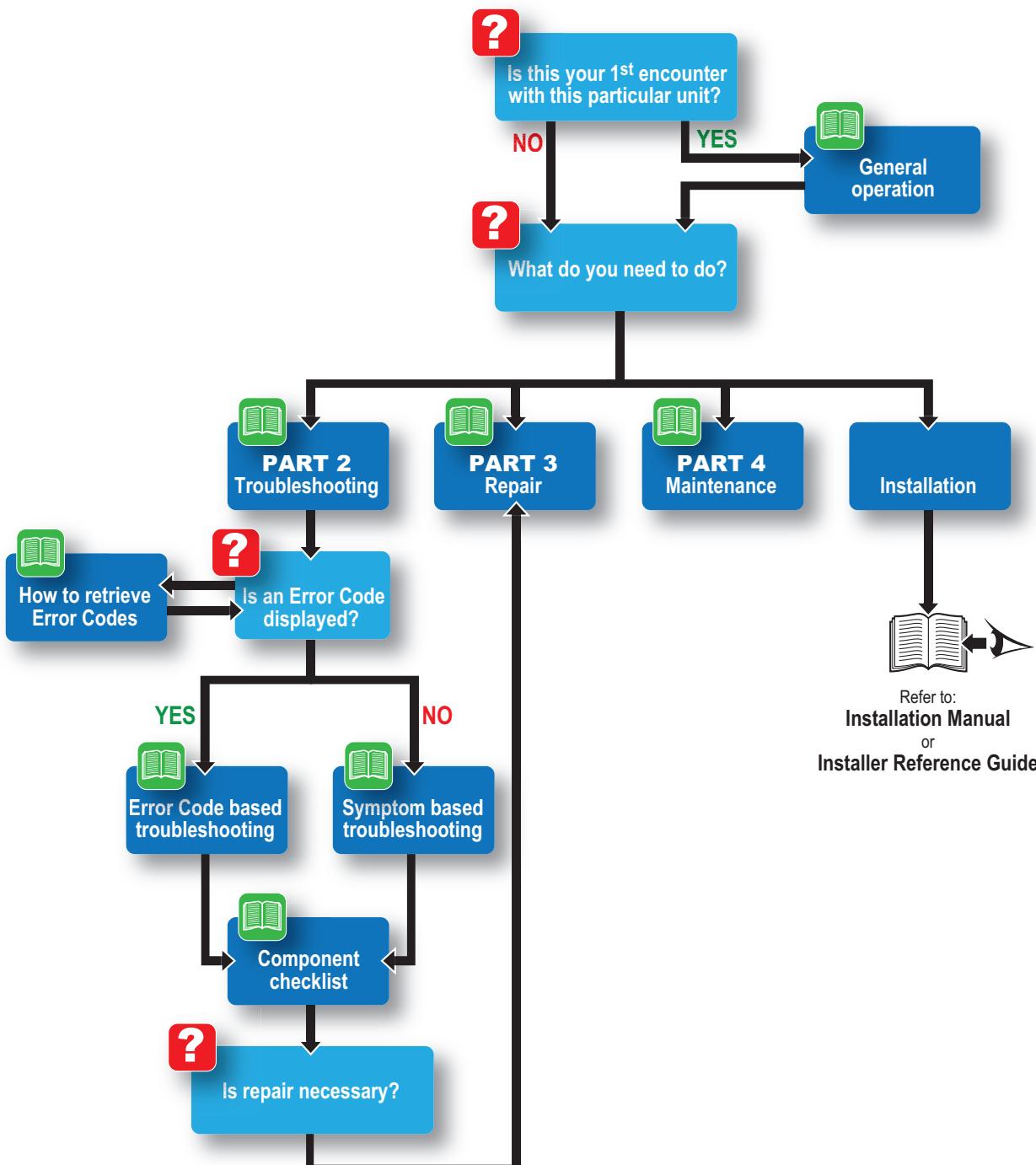


1.4. How to use

1.4.1. Interactive information flow

This Daikin product Service Manual is intended for professional use only. The actions described hereafter, are only to be performed by qualified and certified persons, taking into account the safety precautions mentioned in this manual and the local regulations as well.

By following the diagram below, the reader can find the relevant information related to his/her task. The digital (pdf) version of this book allows direct page access through all active links. When Adobe Acrobat Reader is used, the <Alt> + <Back Arrow> keys or the arrow in the top right-hand corner of this page can be used to return to the previously viewed page.



1.4.2. Parts of the book

This Daikin product Service Manual is intended for professional use only. The actions described hereafter, are only to be performed by qualified and certified persons, taking into account the safety precautions mentioned in this manual and the local regulations as well.

As can be observed from the Table of Contents, this manual is split up into several chapters:

1.4.2.1. The introduction chapter

The chapter "[Introduction](#)" on page 9 includes the safety precautions, this topic and the general operation description of the product(s) this manual refers to.

1.4.2.2. The troubleshooting chapter

The chapter "[Troubleshooting](#)" on page 19 not only deals with the methods to recognize and resolve occurring error codes; it also describes the methods how to solve a problem that does not immediately trigger an error code. Such problems are referred to as 'symptom based'. Both the error code based and symptom based troubleshooting tables, indicate possible causes, the necessary checks and in case required, how to repair. The possible causes have been sorted to probability of occurrence and speed of execution.

1.4.2.3. The repair chapter

The chapter "[Repair](#)" on page 93 handles the removal and replacement of the major components in the product and discusses cleaning methods as well if applicable, such as for filters. Where applicable, refrigerant handling precautions are mentioned for certain actions; please consider these carefully for your own safety.

1.4.2.4. The maintenance chapter

The chapter "[Maintenance](#)" on page 151 of this manual describes the maintenance intervals and procedures to be performed on the product. Remember that a well maintained product, is a more reliable and efficient product.

1.4.2.5. Appendices

Finally, the service manual provides in chapter "[Appendix](#)" on page 153 valuable reference data such as piping/wiring diagrams, field settings overview and a checklist to be filled in when you need to escalate an issue to your dealer.

1.4.3. Contact information

This manual has been made with much care and effort. Use it in your daily jobs, as it has been made for you.

Despite our efforts, there is always a chance some cleric or other mistake has been made during the creation of this manual. We kindly ask you to send the found mistakes, or remarks for improvement, to the no-reply email address servicemanual@daikineurope.com.

