

Variable Capacity Commercial Split Ducted Units

Installation and Commissioning Guide - Indoor



Model Numbers

EVA290T

EVA330T

IMPORTANT NOTE:

Please read this manual carefully before installing or operating your air conditioning unit.

That's better. That's Actron.



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01. Introduction

CONGRATULATIONS on your purchase of an ActronAir Variable Capacity Commercial Series air conditioning unit. This unit has been designed and engineered to provide optimum air conditioning and to achieve maximum energy efficiency.

Your air conditioning system has been manufactured from the highest quality materials. Numerous “in house” and “external” test procedures were conducted to ensure satisfactory operation.

01.01. Information About This Guide

This guide provides installation instructions, specific to your split ducted indoor unit. Read this manual thoroughly and take into consideration all specifications and instructions to ensure correct installation and safe operation of your air conditioning system.

IMPORTANT

Keep this document for future reference. Ensure all technicians that work on the unit can refer to this manual at any time.

01.02. Product Inspections

Check your air conditioning unit and all items against the invoice upon receiving your shipment. Inspect the unit, components and accessories for any sign of damage. If there is any damage to the unit, contact ActronAir Customer Care Department immediately on: **1300 522 722** to obtain a Goods Return Number.

Check the unit nameplate to verify the model, serial number and electrical rated specifications are correct.

01.03. Codes, Regulations and Standards

The installer and/or contractor assumes responsibility to ensure that unit installation complies with the relevant council, state / federal codes, regulations and building code standards. All electrical wiring must be in accordance with current electrical authority regulations and all wiring connections to be as per electrical diagram provided with the unit.

01.04. Important Safety Symbols And Labels

Safety Symbols and labels appear at appropriate sections throughout this manual to indicate immediate or potential hazards. Pay full attention and comply to the safety information and instructions. Failure to follow safety instructions increases the risks of personal injury, death and/or property damage. Damages to the product as a result of such failure may void warranty.

ActronAir has endeavoured to provide sufficient safety warnings and recommendations, however current and prevailing WH&S regulations must be observed and will take precedent whenever performing the installation instructions discussed in this manual.

02. Safety Instructions

- Only licensed HVAC technicians* should install and service this air conditioning equipment. Improper service or alteration by an unqualified technician could result in significant and major damage to the product or property which may render your warranty null and void. Such unqualified service could also lead to severe physical injury or death. Follow all safety instructions in this literature and all warning labels that are attached to the equipment.
 - Prevailing WH&S regulations must be observed and will take precedence to the safety instructions contained on this manual. Safe work practices and environment must be the paramount importance in the performance of all the service procedures.
 - Ensure that unit installation complies with relevant council regulations and building code standards.
 - All electrical wiring must be in accordance with current electrical authority regulations and all wiring connections to be as per electrical diagram provided.
 - Secure the fans against accidental contact. Beware of pinch point and sharp edges which can cause cutting injury.
 - Always wear appropriate PPE, remove any dangling jewelry and protect long hair by wearing a cap.
 - Make sure that all panel covers are always firmly secured and not damaged before and during operation of unit.
 - This appliance is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely. Young children should be supervised to ensure that they do not play with the appliance.
 - Installer must incorporate a means of electrical disconnection (isolator) in the sub mains fixed wiring in accordance with the latest edition of the AS/NZS 3000 (also known as Australian Wiring Rules).
 - Secure the power cords and control cables that goes in/out the unit. Use the cable ties provided in the control box.
- *Qualifications required will be appropriate Electrical, Refrigeration and Refrigerant Handling License and Training dependent on local State/Territory regulations.

NOTES

- This indoor unit is designed to match only with a specific ActronAir outdoor unit as specified in the Technical Selection Catalogue.
- This unit is designed for use with R-410A refrigerant only.
- The unit is supplied with factory charged dry air. Beware of the pressurised air charge when purging. Remove the caps from the connection points and purge the system only when the field pipe connections are ready to be completed.

DANGER

Hazardous Voltage - Risk of Electrocution.

TURN-OFF the power from main isolator before proceeding with any service work of the unit. Observe proper LOCK-OUT/TAG-OUT (LOTO) procedures for electrical appliances in order to prevent accidental switching-on of the power supply.

WARNING

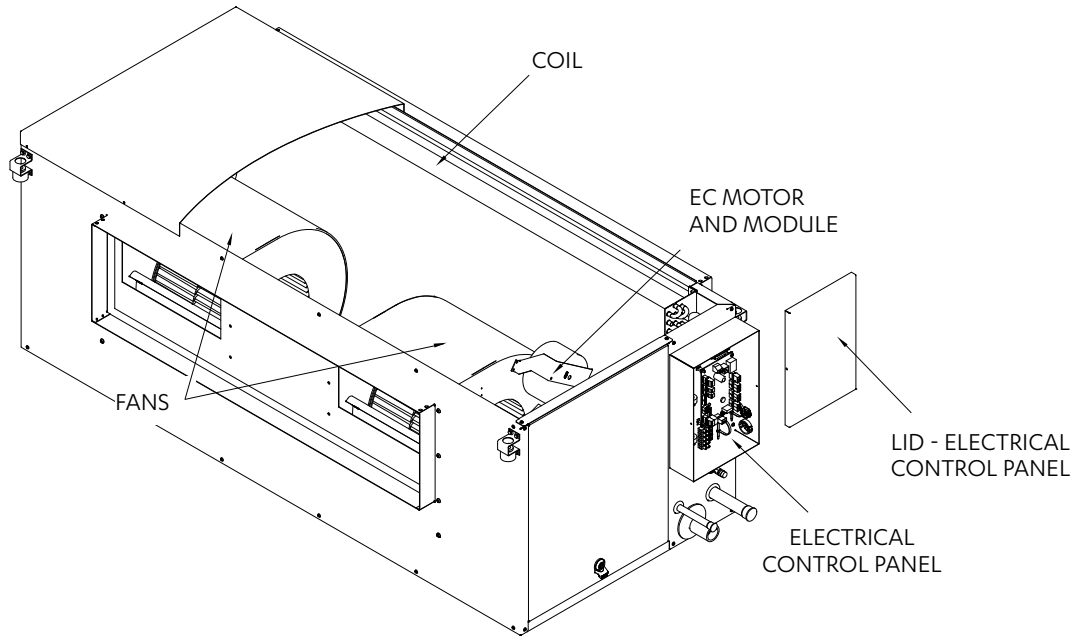
EC Motors are fitted with high power capacitors and can have dangerous residual voltages at motor terminals after power has been isolated. Wait at least 5 minutes after power isolation and test for any residual voltage before beginning service work.

VISUAL INSPECTION AND WORK ASSESSMENT

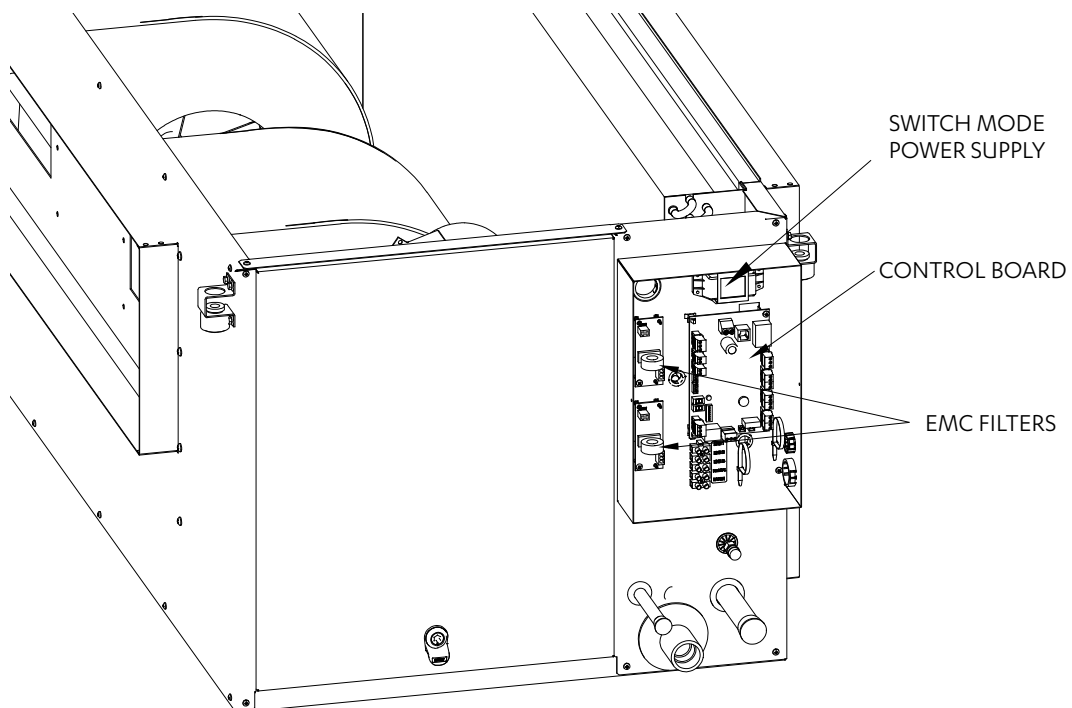
Work areas and conditions must first be assessed and evaluated for any potential hazardous conditions. It is also important to be familiar with the unit parts and components before proceeding with any service task.

03. Components Overview

03.01. Indoor Unit Components Overview

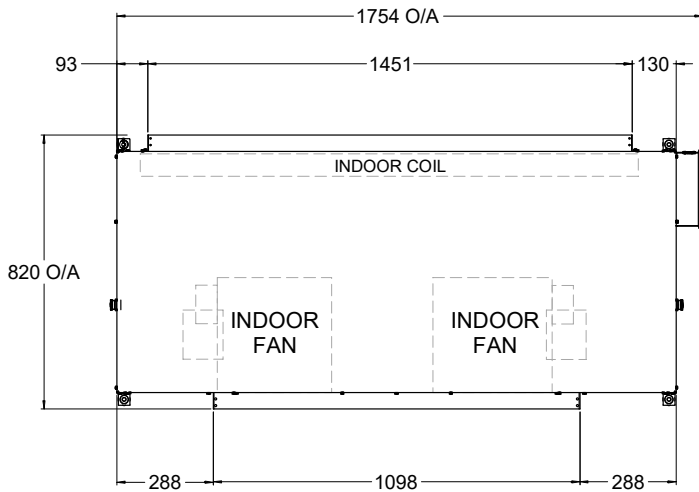


03.02. Electrical Control Panel Overview

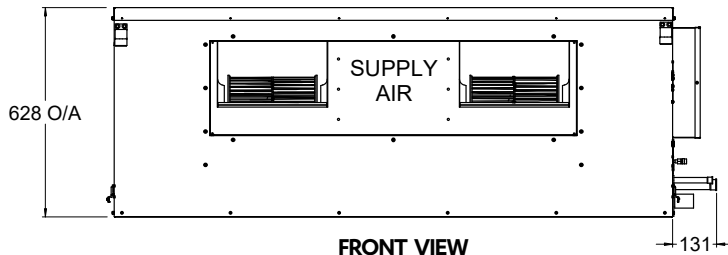


04. Unit Dimensions and Clearances

04.01. EVA290T / EVA330T



TOP VIEW

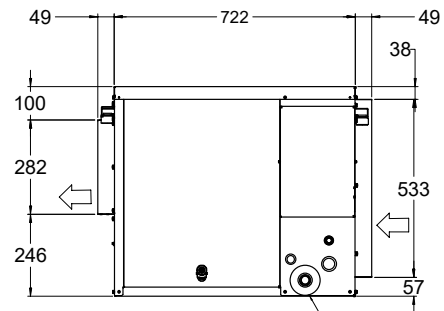


FRONT VIEW

GAS PIPES
 Ø 28.58 mm (1-1/8")
 SWAGED

LIQUID PIPE
 Ø 15.88 mm (5/8")
 SWAGED

OVERALL NOMINAL DIMENSION (H x W x D)
 = 628 x 1754 x 820
 SUPPLY DUCT (H x W) = 282 x 1098
 RETURN DUCT = 533 x 1451
 DRAIN CONNECTION = DN 25mm PN12

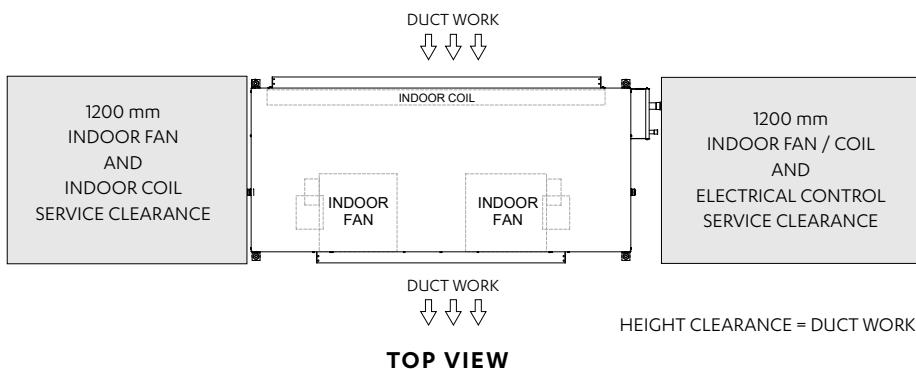


SIDE VIEW

PRIMARY DRAIN
 DN 25mm PN12

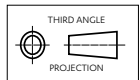
Unit Model Number	Unit Weight (kg)
EVA290T	122
EVA330T	126

Minimum Service Access Areas and Airflow Clearances



TOP VIEW

HEIGHT CLEARANCE = DUCT WORK



NOTES:

1. Do not scale drawing. All dimensions are in mm unless specified.
2. Service Clearances given are suggested minimum based on the condition that the spaces around the units are free from any obstructions and a walkway passage of 1000mm between the units or between the unit and the outside perimeter is available.
3. Minimum service access clearances are responsibilities of the installer, ActronAir will not be held liable for any extra charges incurred due to lack of access.

05. Installation Instructions

The installation instructions provided below are intended as a guide only and do not supersede the relevant council, state and federal codes, regulations and building code standards. Compliance and consultation with the authorities having jurisdiction with the installation of this equipment is the responsibility of the installer. ActronAir will not be held liable for any damages or costs as a result of the installer's failure to comply. Please refer to the matching outdoor unit Installation and Commissioning Guide for further information and details.

Lifting the Unit

The installation instructions provided, in Section 06, adhere to WH&S regulations for safe and secure lifting practices in order to prevent physical injury.

Suggested lifting procedures are outlined in Section 06 as a reference guide to safely lift and transport the unit, however, this does not over rule the industry WH&S practices.

Location

This unit is intended for indoor installation only. It is highly recommended that this indoor unit and accessories, be mounted in the roof cavity.

Mount the unit in a stable and rigid support wherein the weight is properly distributed, such as roof joist and rafters. Take into consideration the minimum service access clearances provided in the unit drawings.

Locate the indoor unit away from the areas where noise is a critical factor. Use rubber mounting pad (not supplied) in order to minimize the transfer of noise and vibration into building structures.

A hanging bracket assembly and rubber grommet (optional on other units) are also provided to secure the indoor unit into the roof rafters. This configuration is most suitable for installations that require the unit to be rigidly secured up from the roof joist.

Condensate Drain

A drain kit (not supplied) is required for the condensate drain to be externally trapped from the indoor unit. Suggested condensate drainage instructions are provided in Section 07 of this document for your reference.

ActronAir recommends the installation of a condensate safety tray and drain (not supplied).

Supply Air and Return Air Duct

The indoor unit is supplied with a duct flange as standard in order to facilitate the system's duct connection into the unit. Supply and return air duct work must be adequately sized to meet the system's air flow and static pressure requirements. Refer to the unit drawing for supply air and return air duct dimensions, specific to your requirement.

NOTE

Fit a flexible duct connection in between the unit and the duct system, where noise and vibration is a critical consideration.

Return Air Filter

Return Air filters must be provided in the return air side of the unit to maintain the efficiency and prolong the operation of the unit. These are also paramount to satisfy the requirement for a clean and hygienic room condition. Return Air filters must be placed in an easily accessible location for service and maintenance.

NOTES

- Return Air filters are not supplied with the unit as individual air filtration requirements vary.
- Ensure that filters are cleaned / replaced regularly.

Field Pipe Connection

Specifications and installation requirements for field pipe connections are contained in the Installation and Commissioning Guide of the outdoor unit that matches your indoor unit. Please refer to this guide and thoroughly understand the procedures for safe and correct indoor and outdoor connection. Field pipes must be insulated.

Electrical Field Connection

The power supply and control communication data to the indoor unit are supplied via the outdoor unit. Please refer to the wiring diagram supplied with the outdoor unit for specifications.

All electrical work must be performed by a licensed electrician and must conform with the wiring diagram and all relevant electrical authorities.

06. Unit Lifting Procedures

06.01. Crane Lifting Method

⚠ WARNING

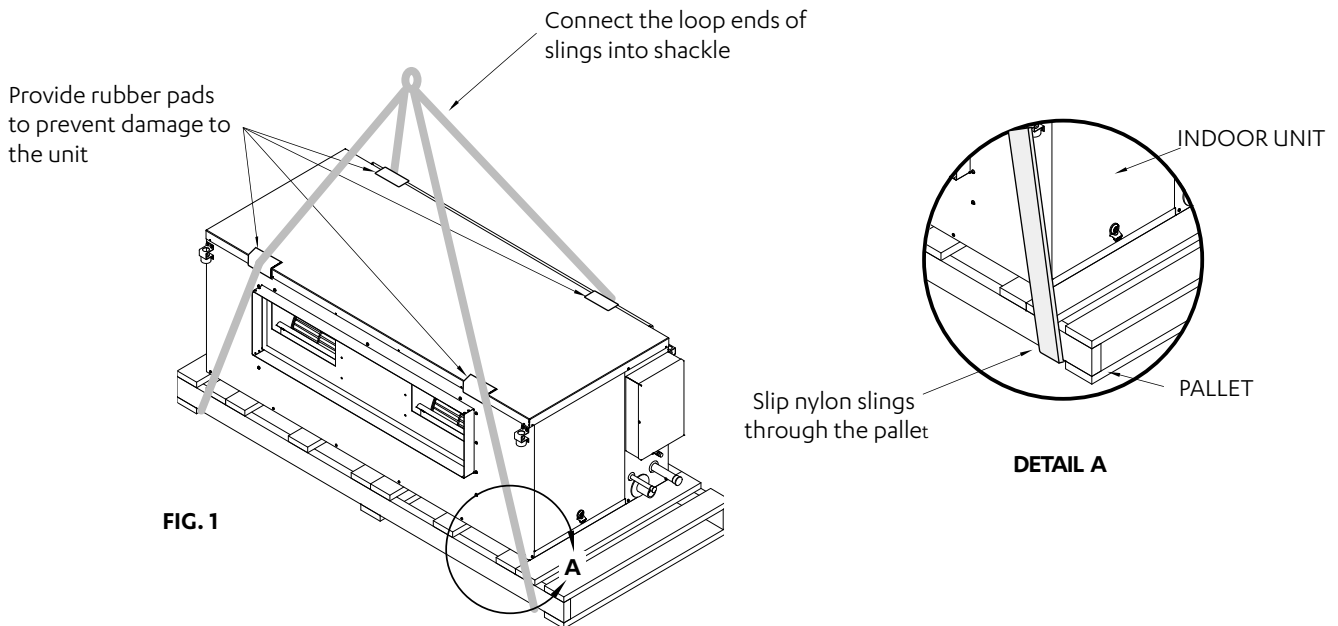
WH&S regulations must be observed and will take precedence during lifting process.

⚠ DANGER

Make sure rigging equipment, accessories and plant are sufficiently and safely capable to lift the unit in order to prevent potential damage to property, severe personal injury or death. Please check unit weight and weight distribution points on unit drawing dimensions section.

NOTES

- Crane lifting method is recommended for high rise lifting.
- Refer to catalogue for unit weight before selecting shackles and slings.
- Lifting procedure and unit model shown are suggestions and for illustration purposes only.
- It is highly recommended that installer observe current industry safe and sound rigging and lifting procedure.



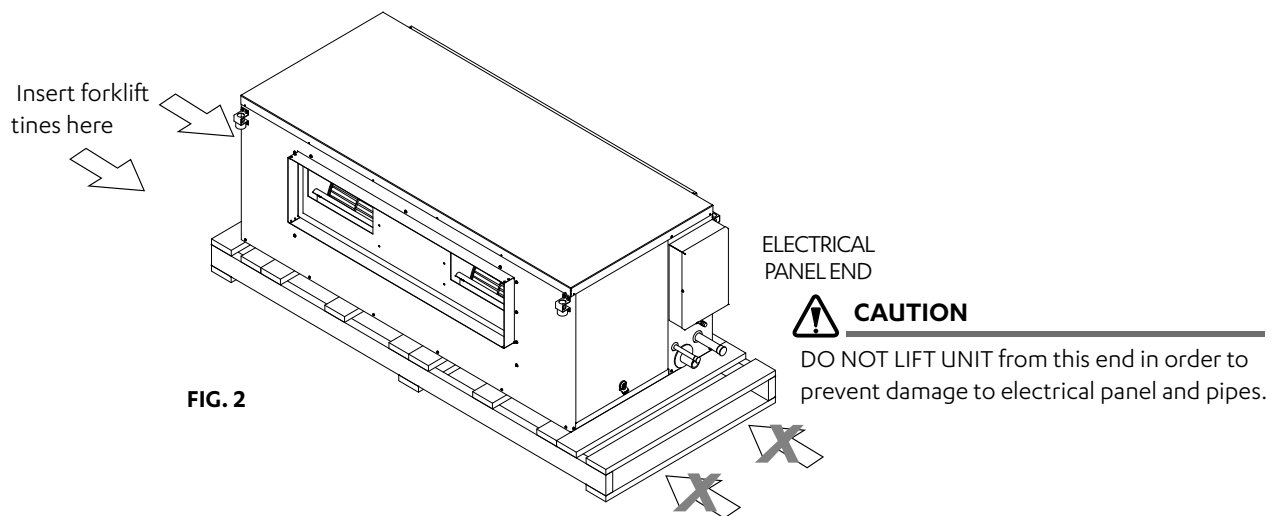
EQUIPMENT REQUIRED FOR CRANE LIFTING:

- 1 x shackle
- 2 x nylon slings
- 4 x rubber pads

Procedure:

1. Slip nylon slings through the pallet as shown in Fig. 1.
2. Use a Bow or Dee shackle to connect the slings.
3. Ensure slings are protected by rubber pads or similar if slings are draped across unit edges, corners, or air grilles . This will prevent the unit from being damaged during lifting.
4. Test lift the unit to determine exact unit balance and stability before hoisting it to the installation location.

06.02. Fork Lift Method

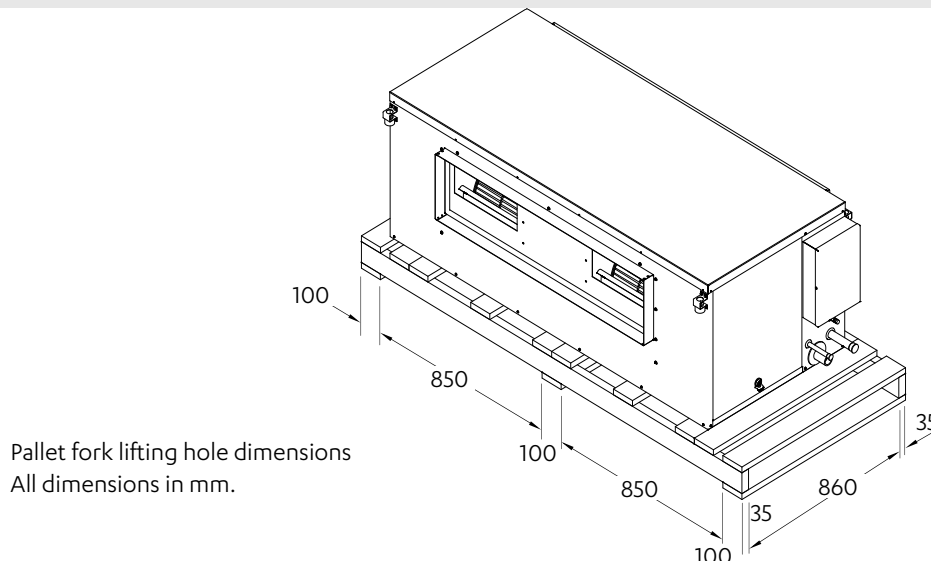


Procedure:

1. To move the unit around with a forklift, insert the fork tines through the pallet, as shown in Fig. 2.
2. Do not lift the unit through the electrical panel end of the unit (See illustration for location of electrical panel end).

CAUTION

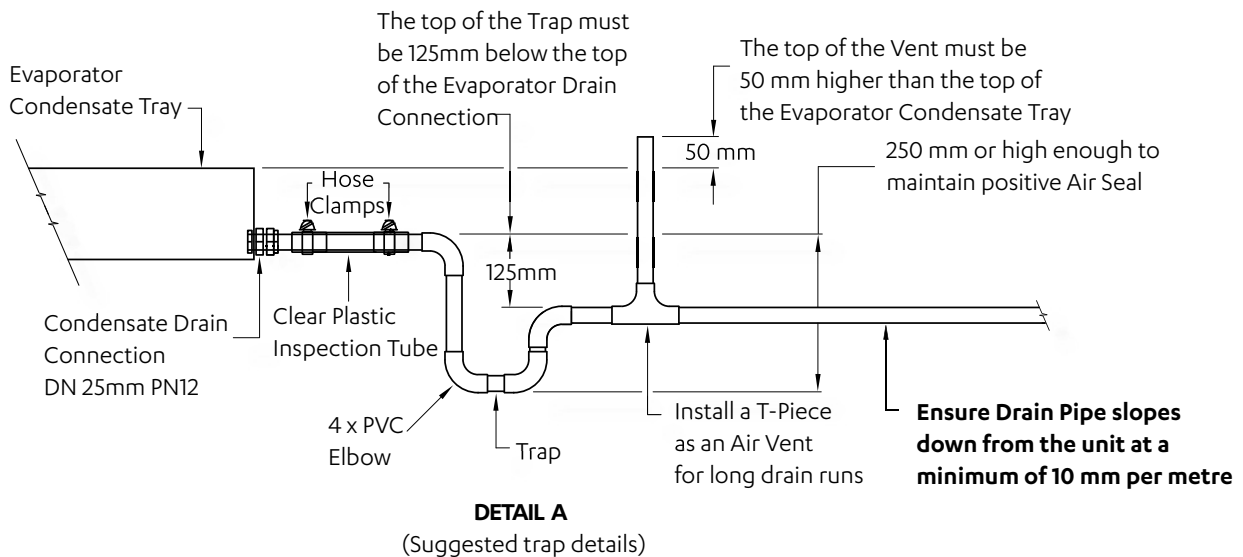
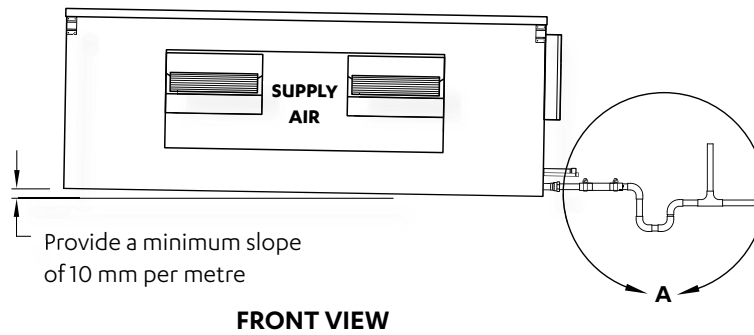
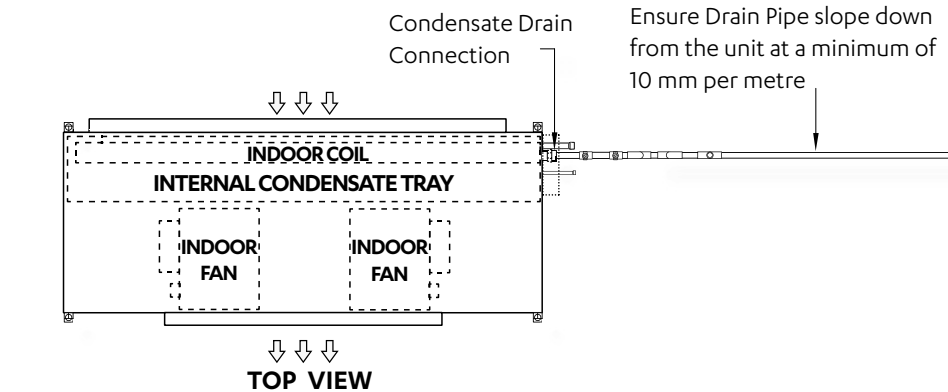
Length of fork lift tines must pass the unit middle section, in order to safely carry the unit.



07. Condensate Drain

NOTES

- Parts of condensate trap are not supplied with the unit.
- Ensure that safety condensate drain (not supplied) is run separately from main condensate drain.



08. Electrical Installation

All electrical work must be carried out by a qualified and licensed technician. Make sure all wiring is in accordance with local wiring rules. Wiring connections should be made in accordance with the wiring diagram provided.

DANGER

Live Electrical Supply !

- During installation of your air conditioning unit, it may be necessary to work in close proximity to live electricity. Only licensed electricians are allowed to perform these tasks.
- Follow all electrical safety precautions when exposed to live electrical components.
- Always make sure that all power supply, including remote controls, are disconnected before performing maintenance.
- Observe proper LOCK-OUT / TAG-OUT (LOTO) procedures to ensure that power cannot be inadvertently energised.
- Failure to disconnect power before maintenance procedure can result in serious injury or death.
- All electrical wiring must be in accordance with the relevant electrical authority rules and regulations.

Wiring Diagram

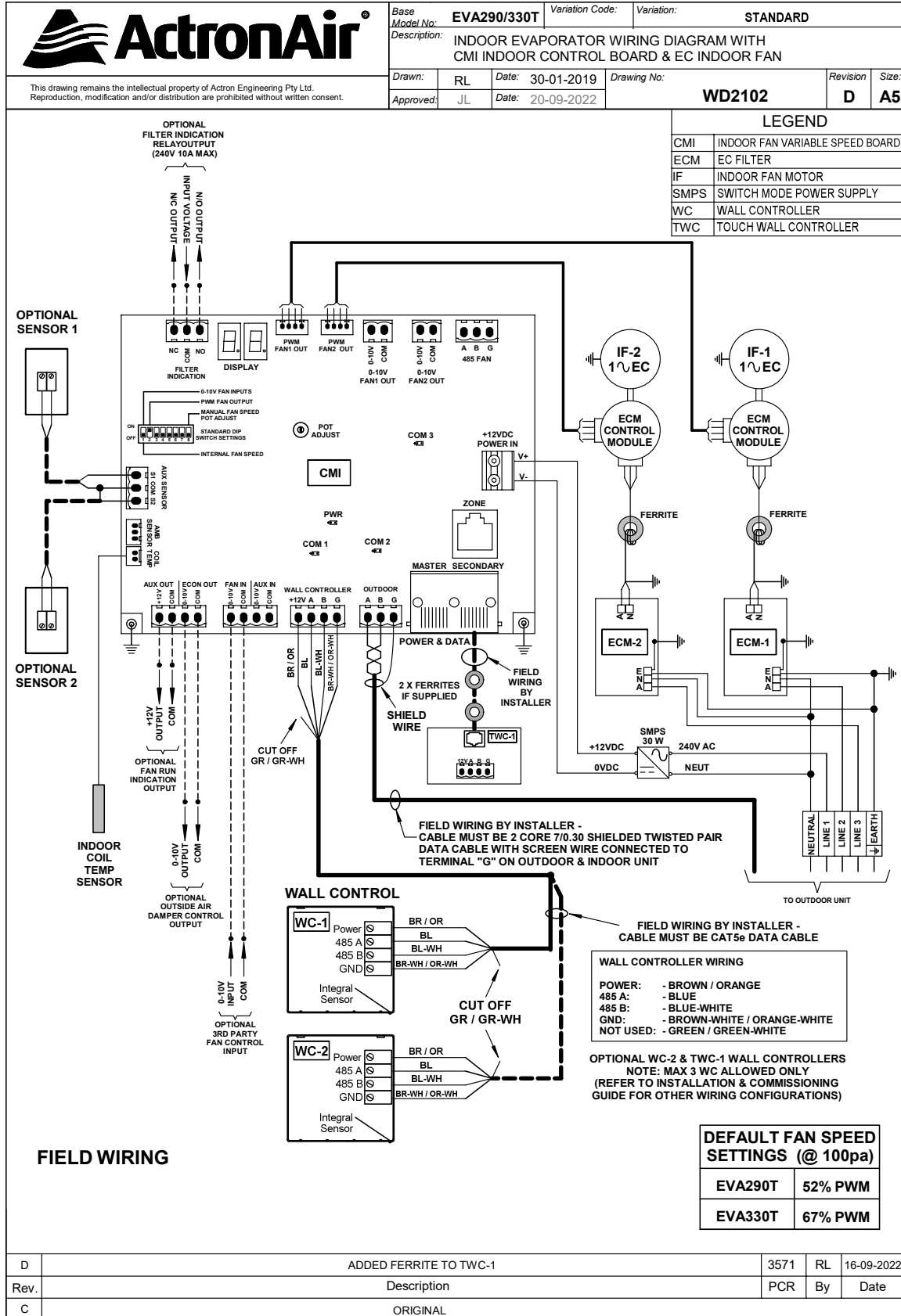
The wiring diagram specific for your air conditioning system is located on the inside panel of the control access door. Always refer all wiring installation, servicing and troubleshooting of this equipment to this diagram to ensure correct electrical connection are satisfied.

Supply and Power Requirements Procedure

It is the installer's responsibility to provide power supply wiring to the mains supply terminal strip of the outdoor unit. Make sure all wiring are in accordance with local wiring rules. Wiring should conform to all current electrical authority regulations and all wiring connections to be as per electrical diagram provided with the unit.

- Confirm that the power supply available is compatible with the unit nameplate ratings. The supply power must be within +10% to -6% of the rated voltage as per AS60038.
- Protect electrical service from over current and short circuit conditions in accordance with the latest edition of the AS/NZS 3000 "Australian / New Zealand Wiring Rules". Size protection devices according to the electrical data of the unit.
- Installer to connect an appropriate load break (AC3) isolator in sub-mains wiring.
- Secure the power cords and control cables that goes in/out the unit. Use the cable ties provided in the control box.
- Provide proper unit earthing in accordance with local and national codes.

09. Wiring Diagram



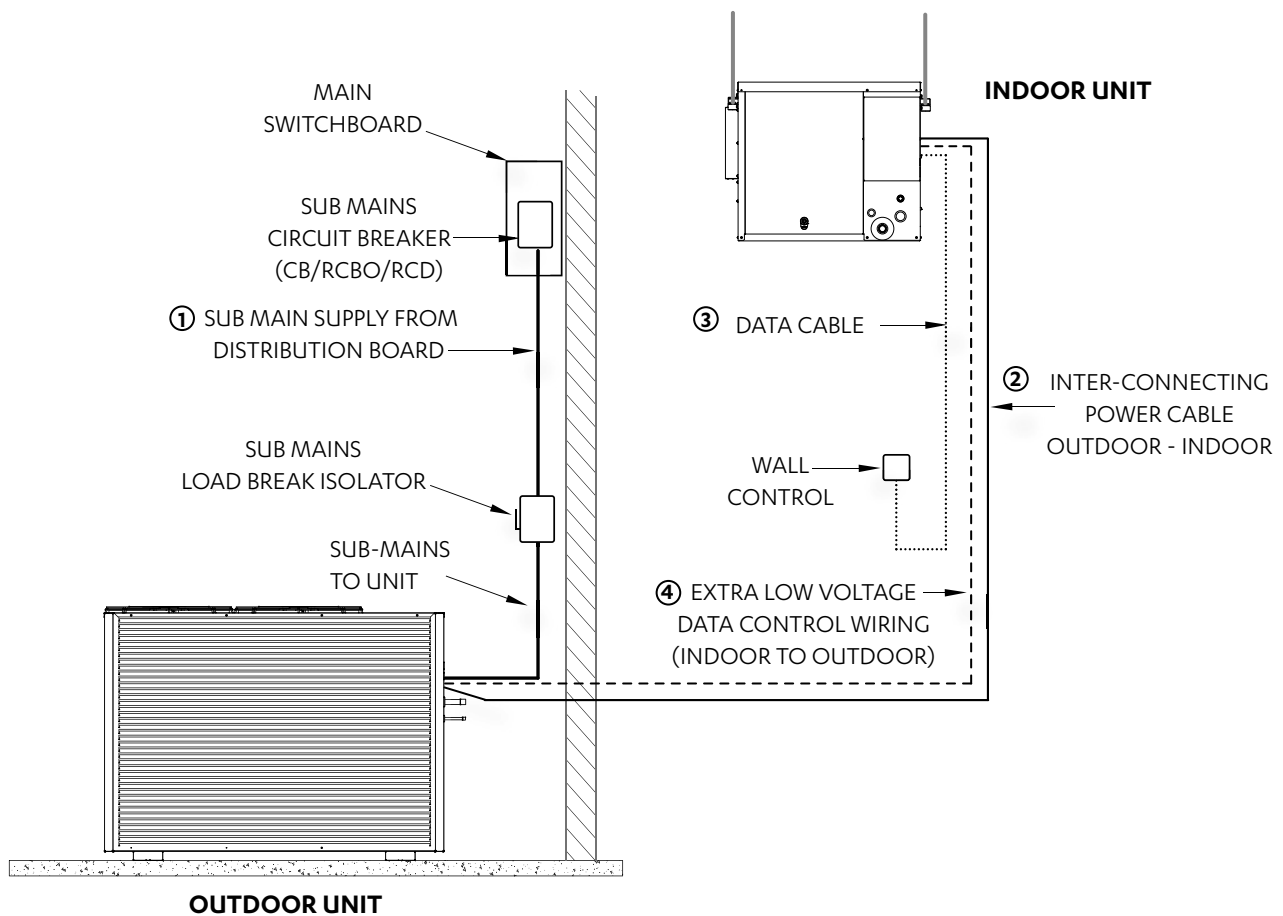
DESIGNS AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

10. Split Unit Electrical Connection

DETAILED WIRING DIAGRAM IS PROVIDED WITH THE UNIT

Outdoor Unit: Located at the back of electrical/compressor access panel.
 Indoor Unit: Located at the back of electrical box cover.

- ① MAINS WIRING (400VAC)
(Three Phase +Neutral+Earth) 50Hz
- ② INTER-CONNECTING POWER CABLE (400VAC)
(Three Phase + Neutral+Earth) 50Hz
- ③ DATA CABLE TO WALL CONTROL
(Cat5E UTP (AWG 24) Data Cable)
- - - - ④ EXTRA LOW VOLTAGE DATA CONTROL WIRING
(2 Core Shielded Twisted Pair 7/0.30 (0.5mm²) Shielded Data Cable)



NOTE

To minimise noise interference, Data and Power cable clearance should be maintained as much as possible (minimum 300mm).

2 Core Twisted Data Cable Shielding Instructions

(ActronAir Part Number: AEDC2)

NOTES

- Maintain the twist of the core wires up to the Green Terminal Plug.
- Maximum strip length of outer insulation to the Green Terminal Plug is 50mm.
- Make sure the cable colours used for the Data Terminal in Outdoor Unit match the Data Terminal in Indoor unit.

Outdoor Unit Data Terminal (Green Plug)

“Terminal A” - White Wire

“Terminal B” - Black Wire

“Terminal G” - Shield Wire

Indoor Unit Data Terminal (Green Plug)

“Terminal A (+)” - White Wire

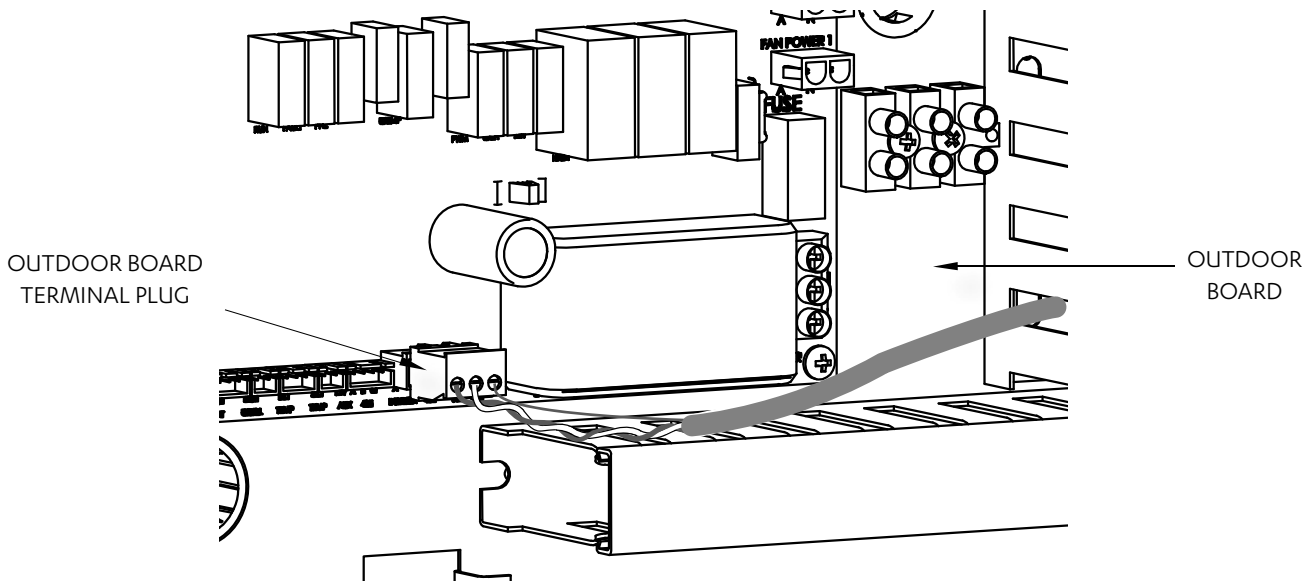
“Terminal B (-)” - Black Wire

“Terminal G” - Shield Wire

Insert data cable through the lower snap bushing and first cable tie on the right hand side of the electrical panel.

Connect core wires and shield wire into the Outdoor Board green terminal plug marked “INDOOR A, B and G”.

(Refer to unit wiring diagram for complete wiring connection details).



CIRCUIT BREAKER SIZE AND CABLE SIZE REQUIREMENT

Model	Circuit Breaker Size Amps	Cable Size * (mm ²)	
		MAIN	O.D. to I.D.
EVA290T / EVA330T	32.0	6.0	1.0

* Suggested Minimum Cable Size should be used as a guide only, refer to the latest edition of the AS/NZS 3000 “Australian / New Zealand Wiring Rules” for more details.

11. Maximum Cable Lengths

11.01. Wall Controller Options

Maximum of three (3) wall controllers in below combinations is allowed on unit. See below table.

Combinations	Wall Controllers		
	WC 1	WC 2	WC 3
1st Option	NEO		
2nd Option	NEO	NEO	
3rd Option	NEO	NEO	LC7-2
4th Option	NEO	LC7-2	
5th Option	NEO	LC7-2	LC7-2
6th Option	LC7-2		
7th Option	LC7-2	LC7-2	
8th Option	LC7-2	LC7-2	LC7-2

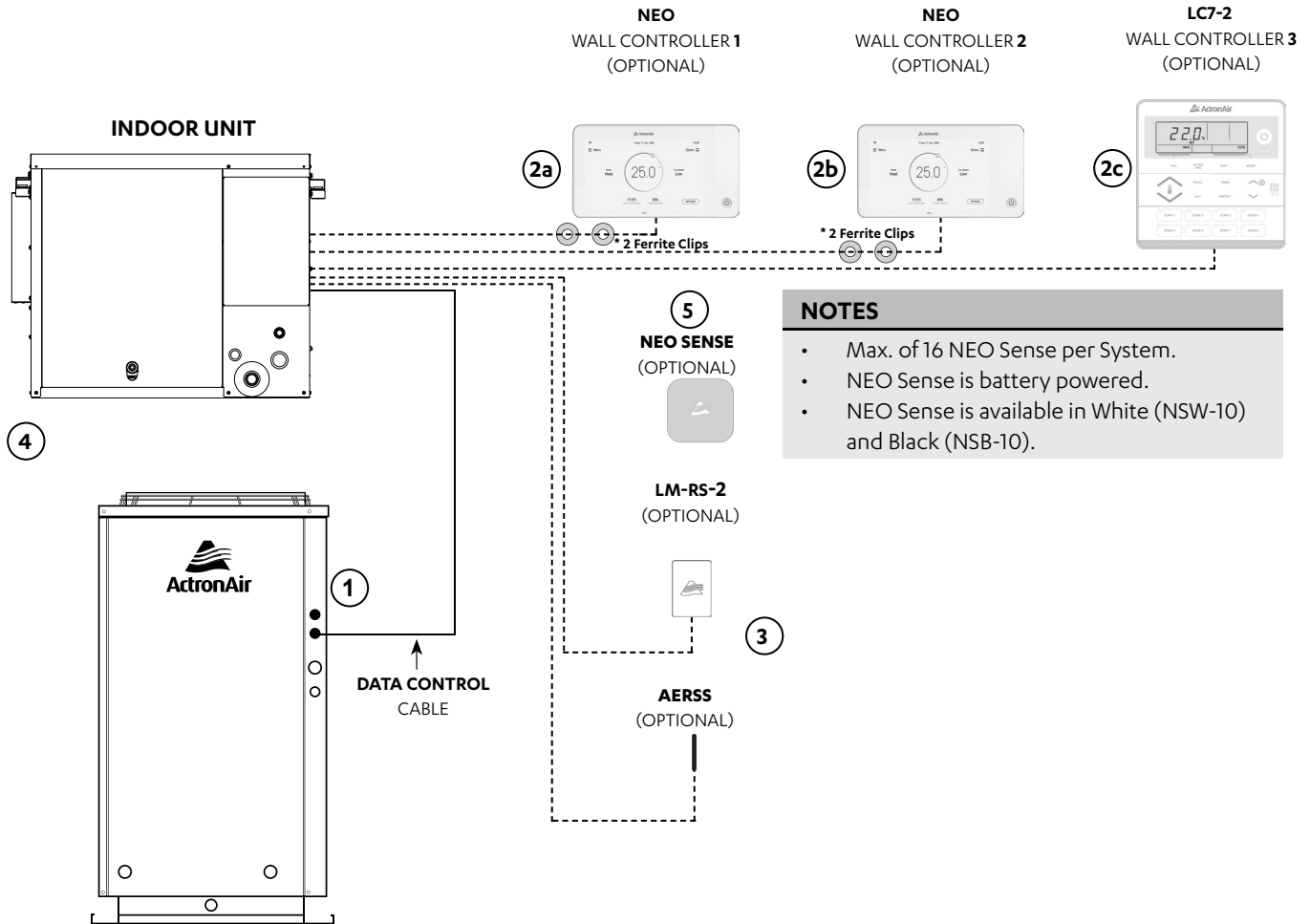
NOTES

- NEO - Available in White (NTW-1000) and Black (NTB-1000) colours.
- LC7-2 - Available in White and Grey colours.
- In the instance of a combination of NEO and LC7-2 being connected together, the NEO will always need to be addressed as C1.

11.02. Wiring Configuration : Recommended

NOTES

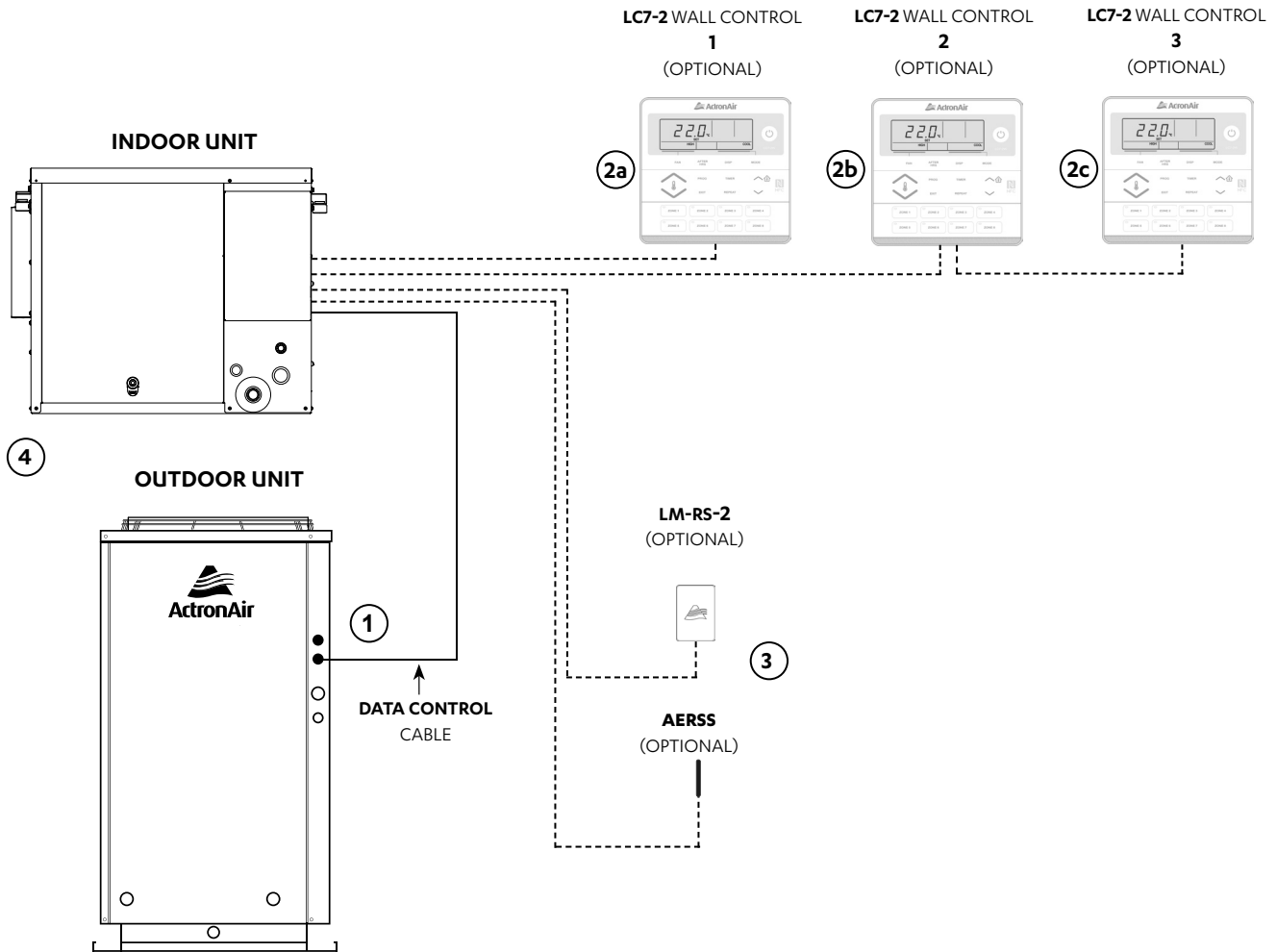
- Diagram shown below is a general representation only. Refer to individual unit wiring diagram for complete wiring connection details.
- Long runs beside Mains cables or TV antenna cables should be avoided.
- Wiring configuration for LR7-1 and LC7-2 wall controller is the same.
- Daisy connection is not allowed for the NEO wall controller.
- Two Ferrite Clips*, if supplied, are to be placed 200mm and 400mm from the NEO controller.



Item	Description	Maximum Cable Length
1 to 4	Outdoor PCB to Indoor PCB	100 m
4 to 2a, 4 to 2b,	Indoor PCB to Wall Controller	90 m
4 to 2C	Indoor PCB to Wall Controller	100 m
4 to 3	Indoor PCB to Remote Sensor	100 m

Description	Cable Type
LC7-2 and NEO Field Control Wiring	Cat5E UTP (AWG 24) Data Cable
Indoor to Remote Sensor	Cat5E UTP (AWG 24) Data Cable
Indoor to Outdoor Data Cable	2 Core (1 Pair) Twisted Pair, 7/0.30 (0.5mm ²) Shielded Data Cable

11.03. Alternate Wiring Configuration



NOTES

- Diagram shown above is a general representation only. Refer to individual unit wiring diagram for complete wiring connection details.
- Long runs beside Mains cables or TV antenna cables should be avoided where possible.

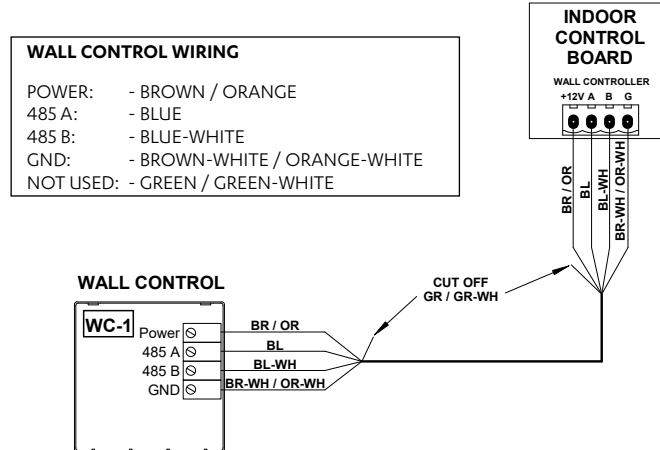
Item	Description	Maximum Cable Length
1 to 4	Outdoor PCB to Indoor PCB	100 m
4 to 2a	Indoor PCB to Wall Control 1	100 m
4 to 2c	Indoor PCB to Wall Control 3 (last controller)	75m total (Daisy Chain)*
4 to 3	Indoor PCB to Remote Sensor	100 m

* Maximum Daisy Chain connection is up to 2 wall Controls.

Description	Cable Type
LC7-2 Field Control Wiring	Cat5E UTP (AWG 24) Data Cable
Indoor to Remote Sensor	Cat5E UTP (AWG 24) Data Cable
Indoor to Outdoor Data Cable	2 Core Shielded Twisted Pair 7/0.30 (0.5mm ²) Shielded Data Cable

12. Wiring Connections

12.01. LC7-2 Wall Control Wiring Connections

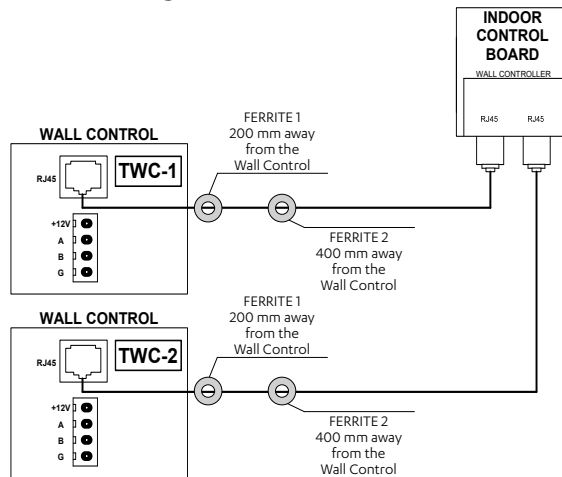


12.02. NEO Wall Control Wiring Connections

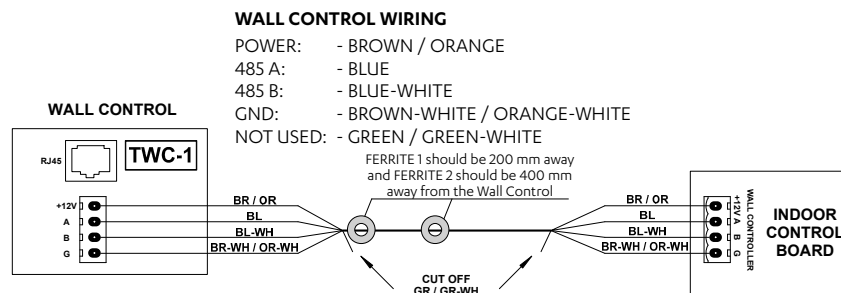
NOTE

Two Ferrite Clips, if supplied, are to be placed 200mm and 400mm from the NEO controller.

12.02.01. NEO RJ45 Wiring



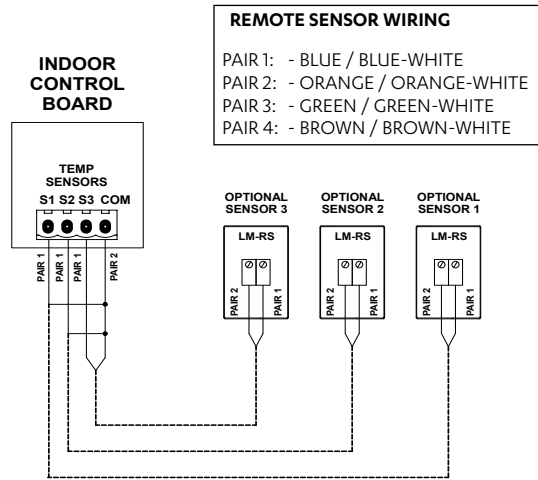
12.02.02. NEO Hard Wiring



12.03. LM-RS-2 Optional Sensor Wiring Connections

NOTE:

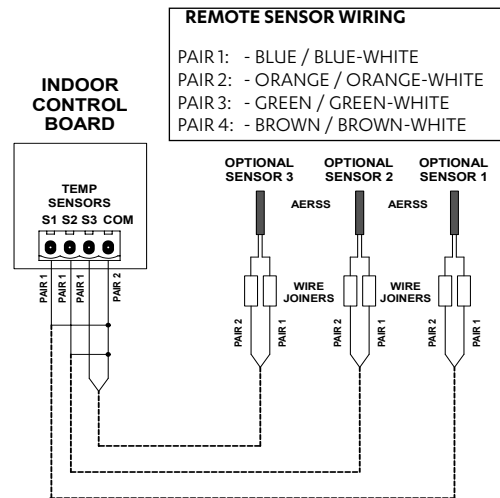
- PAIR 1 AND 2 USED FOR ILLUSTRATION PURPOSES ONLY.
- CUT OFF AND TERMINATE ANY UNUSED PAIRS TO ENSURE NO WIRING IS LEFT EXPOSED



12.04. AERSS Optional Duct Sensor Wiring Connections

NOTE:

- PAIR 1 AND 2 USED FOR ILLUSTRATION PURPOSES ONLY.
- CUT OFF AND TERMINATE ANY UNUSED PAIRS TO ENSURE NO WIRING IS LEFT EXPOSED



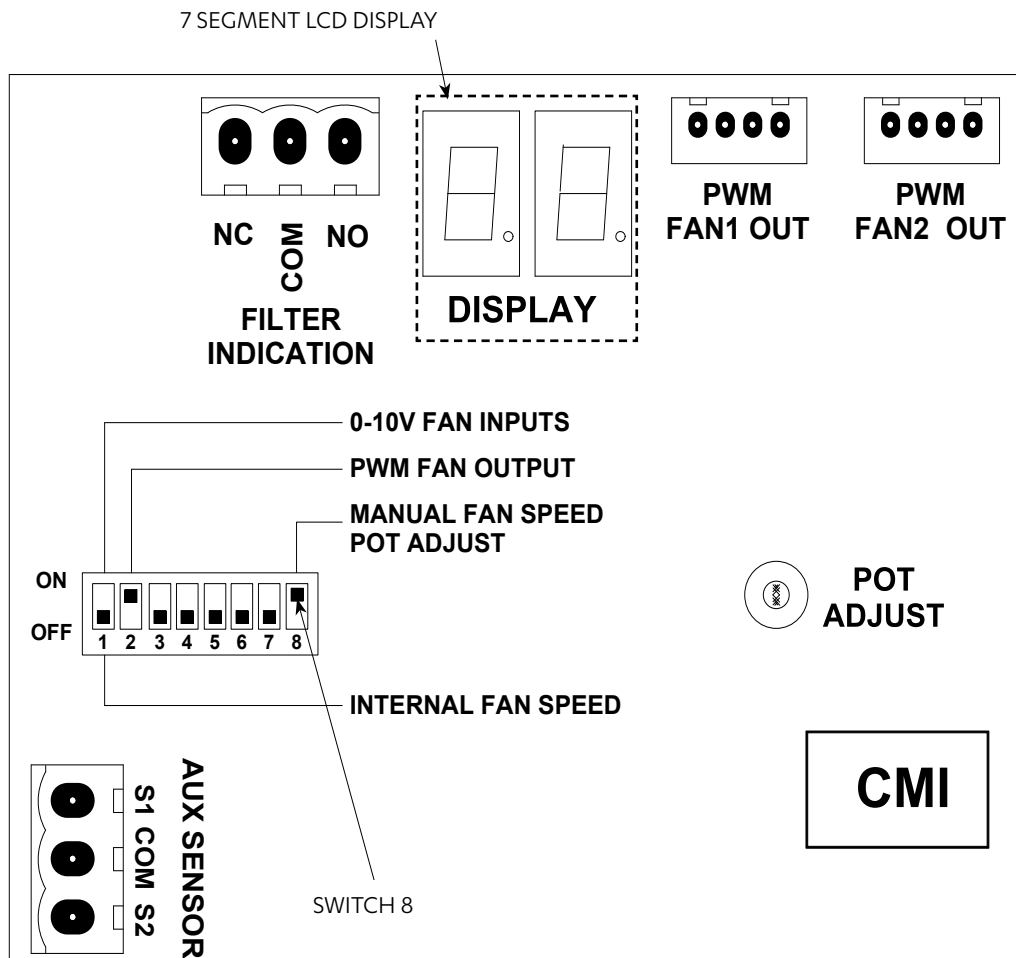
13. EC Indoor Fan Commissioning

There are various ways of commissioning Indoor Fan Airflow. This could be done using the Outdoor Unit CPU, NEO/LC7-2 Wall Control or 3rd Party Controller depending on the installation requirement. See Outdoor Unit Commissioning Guide for details.

It is possible to operate the fan, without an outdoor or NEO/LC7-2 connected, to allow air balancing to take place. This can be done by following the steps below:

Step 1. On the CMI board, set dip switch 8 to **ON**.

Step 2. Apply power to the Indoor unit. Using the on-board potentiometer, manually adjust the fan PWM speed. This will be displayed on the 7 segment display.



Step 3. Once the air balancing is complete, set the dip switch 8 back to **OFF**.

Step 4. Refer back to Outdoor Unit for completing system configuration.

NOTE

Once dip-switch number 8 is on the indoor fan will start immediately. If the dip switch is left on the indoor fan will remain running at all times.

14. Maintenance Frequency Checklist

Regular servicing of equipment by a qualified technician is recommended every 12 months for residential applications and every quarter for commercial applications. Regular servicing of your unit helps in maintaining its optimum performance and reliability. **The following checklist and service periods are provided as a guide only, as some sites may require more frequent servicing.**

ELECTRICAL											
Parts	Service Period					Detail of Service Check	Service Methods				
	1 Mth	3 Mth	6 Mth	1 Yr	2 Yrs			3 Yrs	4 Yrs	5 Yrs	
Isolators / Printed Circuit Boards				✓						Visual Inspection	Tighten Terminals as necessary on isolators and printed circuit boards
Electrical Connections				✓						Check all electrical terminals, mains, communications, etc	Re-tighten if loose.

INDOOR SECTION											
Parts	Service Period					Detail of Service Check	Service Methods				
	1 Mth	3 Mth	6 Mth	1 Yr	2 Yrs			3 Yrs	4 Yrs	5 Yrs	
Casing / Panels and Frames		✓								Visual check for damage, rust and dust accumulation.	For highly corrosive environment, wash panels quarterly with water and neutral detergent solution. Wax panels. Repair / re-paint where required.
Insulation			✓							Visual check for insulation conditions.	Repair / replace insulation material.
Fan			✓							Visual check for run out of balance and dust attached	Clean off dust as necessary to negate possibility of fan running out of balance
Motor				✓ Ω						Visual check on wiring. Insulation resistance check to be carried out annually	Measure insulation resistance to earth with insulation tester. Insulation resistance should be more than 1MΩ.
Heat Exchanger			✓							Check for clogging by dust. Check for leaks / damage.	Clean air inlet side as necessary. Straighten any bent fins using fins comb.
Drain Pan/ Condensation line		✓								Check for obstructions and free flow of water	Clean to eliminate obstructions/ sludge and check condition of pan. Pour water to ensure flow
Filter *	✓									Check for clogging by dust.	Clean Filter
Temperature Readings		✓								Measure air on and air off	Place temperature probe in return and supply air of unit.
Ducting			✓							Inspect duct works for air gaps	Re-tape any loose ducts.
Damper Motors (If fitted)				✓						Visual inspection of motors open/closing. Ensure no obstructions	Drive motors opened and closed. Ensure correct operation.

*Service period for filter cleaning may vary depending on operating time and surrounding environment.

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Document: 0525-068 Ver. 4 Issue Date: 10/2022