Installation Instructions

Variable Refrigerant Flow (VRF) System

Wired Remote Control

Model Number: **TVCTRLTWRWD01T, TVCTRLTWRWD01A**

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
NOTICE:	Indicates a situation that could result in equipment or property-damage only accidents.

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Important: Environmental Concerns! *Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs such as HCFCs and HFCs.*

Important: Responsible Refrigerant Practices! *Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.*

⚠ WARNING

Personal Protective Equipment Required!

Installing/servicing this unit could result in exposure to electrical, mechanical and chemical hazards. Before installing/servicing this unit, technicians MUST put on all Personal Protective Equipment (PPE) recommended for the work being undertaken. ALWAYS refer to appropriate MSDS sheets and OSHA guidelines for proper PPE. When working with or around hazardous chemicals, ALWAYS refer to the appropriate MSDS sheets and OSHA guidelines for information on allowable personal exposure levels, proper respiratory protection and handling recommendations. If there is a risk of arc or flash, technicians MUST put on all necessary Personal Protective Equipment (PPE) in accordance with NFPA70E for arc/flash protection PRIOR to servicing the unit. Failure to follow recommendations could result in death or serious injury.

⚠ WARNING

Proper Field Wiring and Grounding Required!

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state electrical codes. Failure to follow code could result in death or serious injury.

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Pre-installation

Table 1. Components

Wired remote control	Cable ties (2)	Cable clamps (3)	M4X16 screws (5)	User manual (1)	Installation manual (1)	U terminals (6)
						

Figure 1. Dimensions

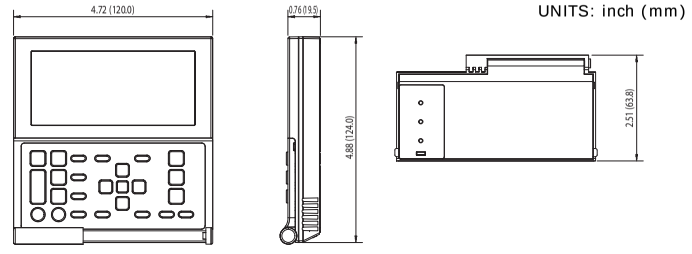

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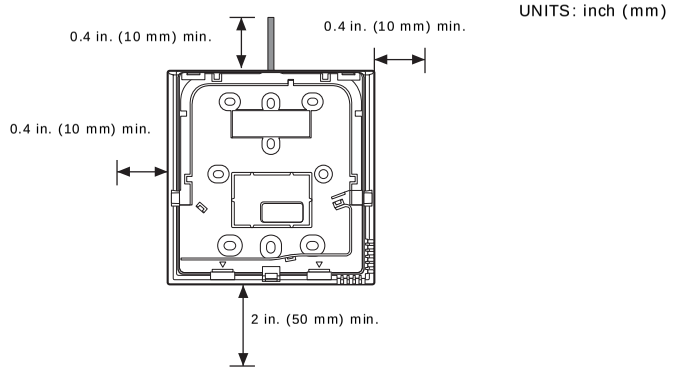
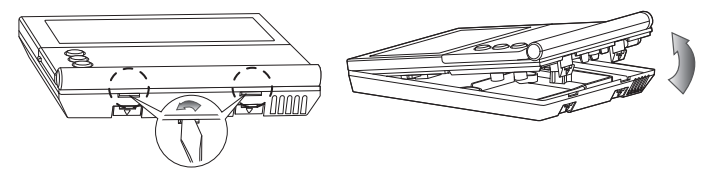
Figure 2. Clearances



Installation

Mounting the Unit

1. Insert a flat head screwdriver into the square groove at the center top of the remote control. Pull up the front cover to separate it from the back cover.



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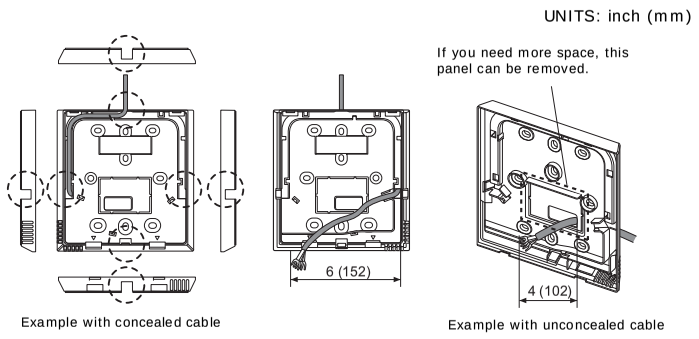
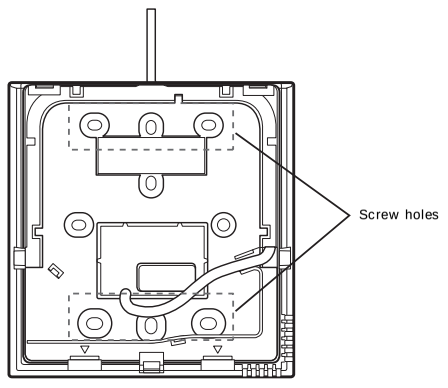
2. Arrange the power cable and the communication cable so that they fit in the housing along the edges of the back cover.



3. Firmly secure the back cover of the remote control to the wall using the three provided screws.



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Wiring

Observe the following requirements and precautions when making electrical connections.

⚠WARNING

Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

- Make all electrical connections in accordance with electrical codes and ordinances.
- If you install the wired remote control with thermostat wire, remove 12 in. (30 cm) of the cable sheath and install only two of the conductors. The recommended wire size is AWG 18.
- Use either the provided U-terminals or U-terminals that match the specifications of those provided.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- Tightening torque for M4 screws: 0.86–1.06 lbf·ft (12.0–14.7 kgf·cm).

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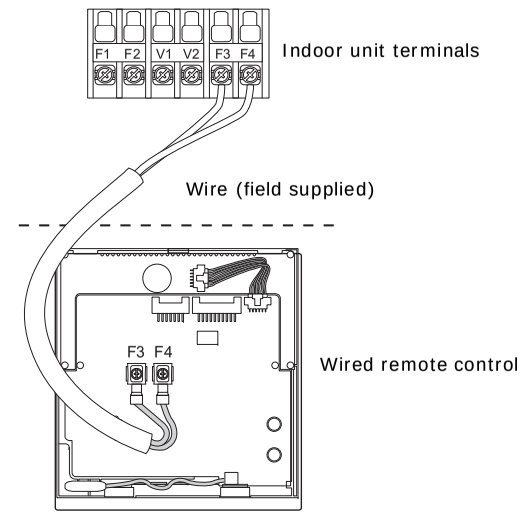
Connecting Communication Wiring

Connect communication wiring to the wired remote control at terminals F3,F4 and to the indoor unit at terminals F3,F4.

Best Practice: *Maintain consistent polarity with wiring connections (F3 to F3, F4 to F4) to minimize troubleshooting time.*



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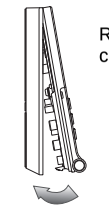
Reassembling the Device

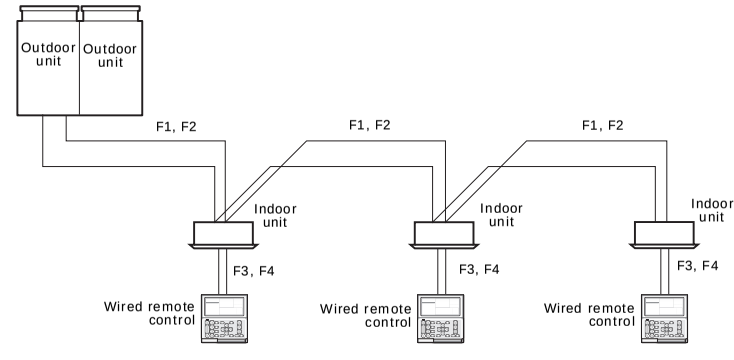
Reassemble the wired remote control by aligning the front cover with the top of the back cover and then tilting it downward, as show in the figure to the left. After replacing the cover, confirm that no wires are stuck in the gap between the front and back covers.



Wiring for Individual Control

Individual control refers to the use of one wired remote control for controlling one indoor unit, as shown in Figure 3.

Figure 3. Wired remote control: Individual control example



Wiring for Group Control

Group control refers to the use of one wired remote control to control multiple indoor units.

- A maximum of 16 indoor units can be controlled as a group.
- All indoor units in the group must be connected to a wired remote control.

Examples of two different scenarios are shown in Figure 4 and Figure 5.

Figure 4. Wired remote control: Group control with multiple indoor units connected to one outdoor unit

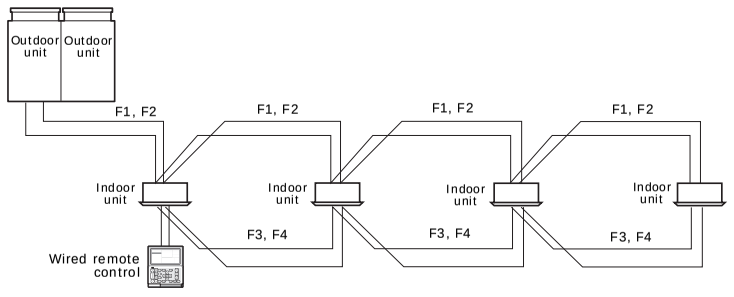
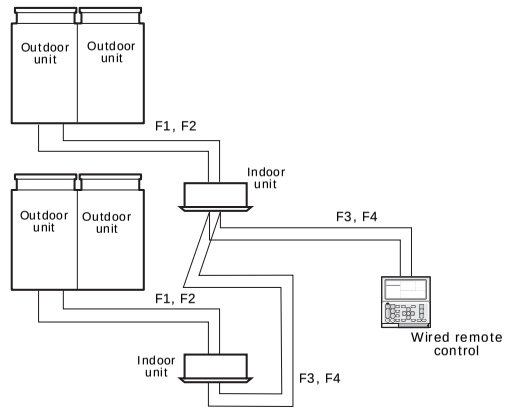


Figure 5. Wired remote control: Group control with multiple indoor units connected to different outdoor units

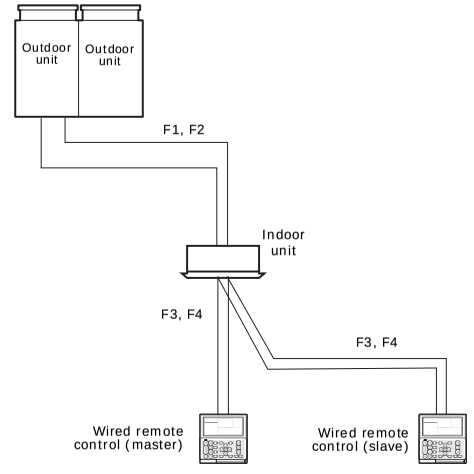


Using Two Wired Remote Controls for Individual or Group Control

Two wired remote controls can control one indoor unit or a group of indoor units.

In this application, one wired remote control must be configured as a master and one wired remote control must be configured as a slave. (Refer to the Configuration section in the indoor unit manual.)

Figure 6. Two wired remote controls used for individual or group control



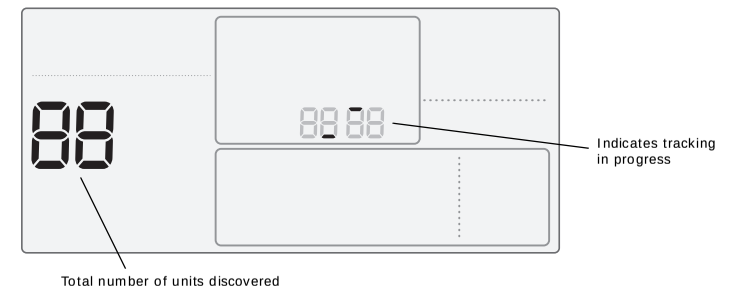
Indoor Unit Tracking

The VRF system uses the term “tracking” for the process of indoor unit discovery and addressing. During tracking, the wired remote control display flashes to indicate that tracking is in progress. As units are discovered, the display shows the quantity on the left side (see Figure 7).

Note: *If a system has master and slave wired remote controls, only the master displays the total quantity of discovered units.*

- When power is applied to a newly installed wired remote control, the device automatically begins tracking.
- To repeat tracking at any time, press the **Esc** and **Delete** buttons simultaneously for at least 5 seconds.
- If the number of connected indoor units is increased or decreased after installation, repeat the tracking process.

Figure 7. Indoor unit tracking in progress



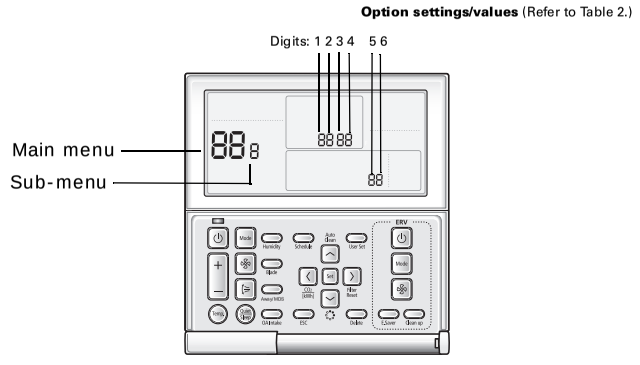
Configuration

To configure or verify option settings on a wired remote control, use the following procedure. Refer to Table 2 for option descriptions and corresponding menu codes.

- If the unit does not support the function, “NONE” will be displayed.
- In configuration mode, temperature value appear in Celsius.

1. Press the **Set** and **Esc** buttons simultaneously for > 3 seconds. The main menu will appear as shown in Figure 8.

Figure 8. Wired remote control LCD display



2. Using the up/down arrow buttons, select the appropriate main menu code by referring to Table 2. Press the right arrow button to display the sub-menu.
3. Using the up/down arrow buttons, select the appropriate sub-menu code by referring to Table 2. Press the right arrow button to display the current setting, which will represent either an option setting or a value, depending on the selected menu and sub-menu.
4. To change the digit 1 option setting, use the up/down arrow buttons. Press the right arrow button to move to digit 2. To change the digit 2 option setting, use the up/down arrow buttons. Repeat this procedure for digits 3–6.
5. To save settings and exit to the sub-menu, press the **Set** button.

Note: *To exit to normal mode without saving settings, press the* ***Esc*** *button.*

Table 2. Option settings/values

Main menu code	Sub-menu code	Option description		Digit	Factory default option setting/ value	Option setting
1	1	Wireless remote control option settings (1)	Cooling/Heating selection	1	0	0: Cooling/Heating 1: Cooling only
			Use of wireless remote control	2	1	0: Not used, 1: Use
			Master/slave wired remote control	3	0	0: Master, 1: Slave
			Temperature unit	4	0	0: Celsius (°C), 1: Fahrenheit (°F)
	2	Wireless remote control settings (2)	Temperature sensor selection	1	0	0: Indoor unit 1: Wired remote control
			Use of average temperature	2	0	0: Not used, 1: Use
			Use of Auto mode	3	1	0: Not used, 1: Use
			Temperature display	4	0	0: Set temperature 1: Room temperature
			Not used	5	—	—
	3	Blade setting/ checking	Blade 1	1	0	0: Unlock, 1: Lock
			Blade 2	2	0	0: Unlock, 1: Lock
			Blade 3	3	0	0: Unlock, 1: Lock
			Blade 4	4	0	0: Unlock, 1: Lock
	4	Not used				

Table 2. Option settings/values (continued)

Main menu code	Sub-menu code	Option description		Digit	Factory default option setting/ value	Option setting
	5	Room temperature compensation	Temperature control reference	1,2,3	0	-9–40°C (16–104°F)
			Temperature compensation value	4,5,6	0	-9.9–9.9°C **Note:** Increments of 0.1°C.
	6	Number of connected units	Number of indoor units	1,2	—	0 – 16
			Not used	3,4	—	—
	7	Temperature increment/decrement (°C)		1	0	0: 1°C, 1: 0.5°C, 2: 0.1°C
	8	Not used				
	0	Factory defaults settings **Note:** This setting determines what occurs when a system reset is activated.		1	0	0: Reset has no effect on settings 1: Reset changes settings to factory defaults
2	1	Software code		1-6	—	Software code
	2	Software version		1-6	—	Software version
3	1	Indoor unit room temperature		1,2,3	—	Room temperature (°C)
	2	Indoor unit EVAP IN temperature		1,2,3	—	EVAP IN temperature (°C)
	3	Indoor unit EVAP OUT temperature		1,2,3	—	EVAP OUT temperature (°C)
	4	Indoor unit EEV step		1,2,3	—	EEV step
	5	Indoor unit option checking (1)	Use of central control	1	—	0: Not used, 1: Use

Table 2. Option settings/values (continued)

Main menu code	Sub-menu code	Option description		Digit	Factory default option setting/ value	Option setting
			Use of drain pump	2	—	0: Not used, 1: Use
			Use of electric heater	3	—	0: Not used, 1: Use
			Use of hot water coil	4	—	0: Not used, 1: Use
3	6	Indoor unit option checking (2)	Use of external control	1	—	0: Not used, 1: Use
			Use of RPM compensation	2	—	0: Not used, 1: Use
			Filter time	3	—	0: 2000 hours, 1: 1000 hours
			Heating temperature compensation	4	—	0-2°C, 1-5°C
			EEV stop step in heating	5	—	0: 0/80 steps, 1: 80 steps
4		Indoor unit main address checking		1,2	—	Main address (00–3F, hexadecimal)
		Indoor unit main address setting **Note:** Setting this option requires outdoor unit reset.		3,4	—	Main address (00–3F, hexadecimal)
	1	Indoor unit RMC address setting		5,6	—	RMC address (00–FE, hexadecimal)

Table 2. Option settings/values (continued)

Main menu code	Sub-menu code	Option description		Digit	Factory default option setting/ value	Option setting
	2	Indoor unit option setting/checking		1–24 (See note.)	—	Indoor unit option setting
	3	Indoor unit option (1) setting/checking			—	Refer to the "Configuration" section in the indoor unit installation manual for a complete list of option settings and codes.
	4	Indoor unit option (2) setting/checking			—	
5	1	AHU setting	RPM setting/checking	3,4	—	0–31 steps **Note:** Increments of 1 step.
			Humidity setting/checking	6	—	0: 30, 1 - 40, 2 - 50
	2	AHU discharge temperature setting	Use of discharge temperature control	1	—	0: Not used, 1: Use
			Cooling discharge temperature	3,4	—	8–18°C (46–64°F) **Note:** Increments of 1°C.
			Heating discharge temperature	5,6	—	30–43°C (86–109°F) **Note:** Increments of 1°C.
	3	Fresh duct discharge temperature checking	Cooling discharge temperature	1,2	—	15–25°C (59–77°F) **Note:** Increments of 1°C.
			Heating discharge temperature	3,4	—	18–30°C (64–86°F) **Note:** Increments of 1°C.
6	Not used					

Table 2. Option settings/values (continued)

Main menu code	Sub-menu code	Option description		Digit	Factory default option setting/ value	Option setting
7	1	Master setting/checking (F1F4 line indoor unit master)		123 456	—	address
	2	N/A				
	3	Master setting/ checking (F1F2 line indoor unit master)	Checking	123 456	—	address
	4		Setting	1		0: Not used, 1: Use, 2: Release
0	1	Reset	Factory setting	1	0	0: Not used, 1: Reset
	2		Power master reset	1	0	
	3		Addressing reset	1	0	

Note: *There are 24 available digits. The wired remote control can display only 6 digits at a time. The digits are displayed in 4 groups. Option setting codes are displayed with the first digit of the group a constant value—either 0, 1, 2, or 3—as shown in the table below. This value indicates the group that the digits currently being displayed belong to.*

Digit 1	Digit 2	Digit 3	Digit 4	Digit 5	Digit 6
0	*	*	*	*	*
Digit 7	**Digit 8**	**Digit 9**	**Digit 10**	**Digit 11**	**Digit 12**
1	*	*	*	*	*
Digit 13	**Digit 14**	**Digit 15**	**Digit 16**	**Digit 17**	**Digit 18**
2	*	*	*	*	*
Digit 19	**Digit 20**	**Digit 21**	**Digit 22**	**Digit 23**	**Digit 24**
3	*	*	*	*	*

Errors Codes

Error codes for the wired remote control and the units connected to the wired remote control are displayed in the wired remote control LCD display.

Indoor/Outdoor Unit Error

If an indoor or outdoor unit has an error, the address of the unit that has the error alternates in the display with the error code. See the example in Figure 9, in which E101 has occurred at indoor unit No. 200012. (A = indoor unit.)

Figure 9. Error code display example: Error 101 at indoor unit 200012

Wired Remote Control Error

If the wired remote control has an error, only the error code is displayed; no address is displayed. See the example in Figure 10.

Figure 10. Error code display example: Error at wired remote control

Table 3 contains a list of error codes.

Note: *For error codes on indoor/outdoor units, refer to the installation manual for each unit.*

Table 3. Error codes and descriptions

Display	Description
601	Communication error between wired remote control and indoor units after successful communication.
602	No communication between master and slave wired remote controls.
604	No communication between wired remote control and indoor units.
618	More than the maximum number (16) of indoor units installed.
627	Two or more wired remote controls are set as slaves.
653	Temperature sensor open/close error.
654	- Memory error - No damper feedback

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