Installation Guide

Variable Refrigerant Flow (VRF) System

Simple Touch Wired Remote Controller

Model Numbers: TVCTRLTWR0002T
TVCTRLTWR0002A

⚠ 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.

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Ingersoll Rand

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

⚠ 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.

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

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury. 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.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **Before installing/servicing this unit, technicians MUST put on all 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 PPE in accordance with NFPA 70E or other country-specific requirements for arc flash protection, PRIOR to servicing the unit.**

Revision History

Revision B: Installation option added for MCU/port address settings; deleted incomplete list of error codes.

Revision C: Corrected model number on cover.

Table of Contents

Pre-installation

Table 1. Components

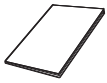
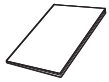
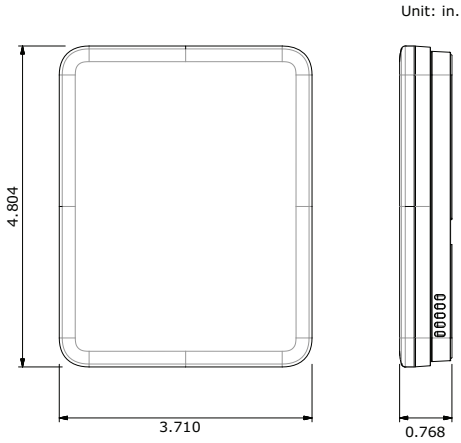
Simple Touch Wired Remote Control	M4X16 screw (4)	User manual	Installation manual
			

Figure 1. Dimensions



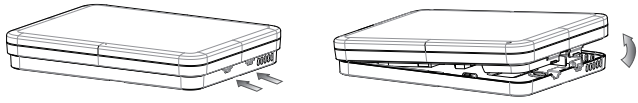
Product Specifications

Power supply	12 Vdc
Power consumption	1.5 W
Operating temperature range	32–102°F (0–39°C)
Operating humidity range	30–90% relative humidity
Communication	2-wire (F3, F4)
Maximum communication length	328 ft
Maximum quantity of controllable devices	16 indoor unit

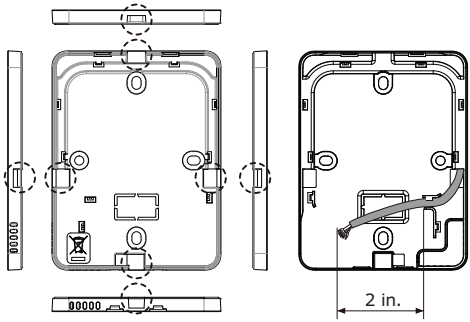
Installation

Mounting the Device

1. Insert a small flat-head screwdriver into the square groove in the bottom of the SimpleTouch Wired Remote Controller. Then pull up the front cover to separate it from the back cover.

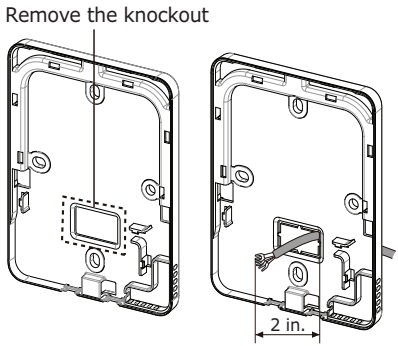


2. Route the communication cable in one of the following ways:
   a. Through the slots in the housing along the edges of the back cover.



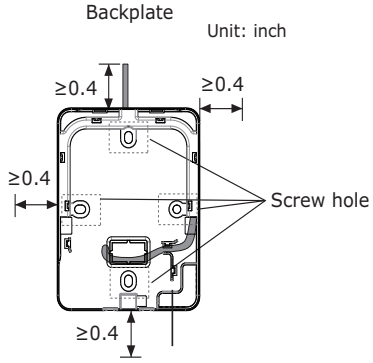
Installations that do not conceal the cable

   b. Through the opening in the back cover, after removing the knockout.

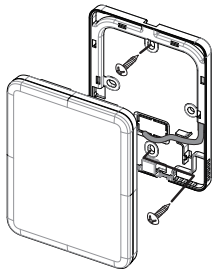


Installations that conceal the cable

3. Select a mounting location that allows 0.4 in. of clearance on all sides of the control.



4. Using at least 3 of the provided screws, attach the rear cover of the control to the wall.



Wiring

⚠ WARNING

Hazardous Voltage!

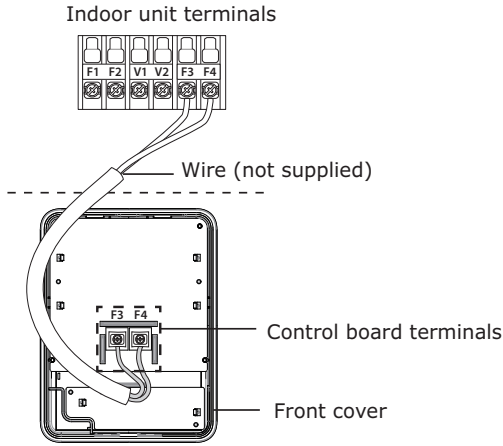
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

Observe the following requirements and precautions when making electrical connections.

- Make all electrical connections in accordance with electrical codes and ordinances.
- If you install the controller with thermostat wire, remove 12 in. of the cable sheath and install only two of the conductors.
- Use 18 AWG, 25 pF/ft nom., 60.7 Ω impedance, braid or foil shielded, twisted pair wire for communications wiring.
- Tightening torque for M4 screws: 0.86–1.06 lbf·ft. Over-tightening may damage screw threads.

1. Connect the communication and power cable (F3, F4) to the terminals on the back cover of the control.

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



2. Re-assemble the control by aligning the two ports at the top of the display with the clips at the top of the back plate and snapping the two pieces together.

NOTICE

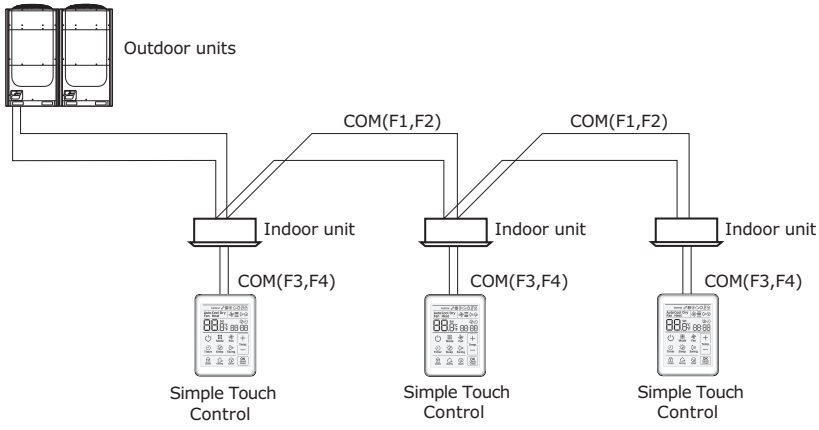
The display and touch pad are sensitive to pressure. When re-assembling the control, ensure that the wires do not push on the back of the display. Pressure to the display may break or distort it.

Wiring for Individual Control

Individual control refers to controlling one indoor unit with the use of one Simple Touch Wired Remote Controller, as shown in Figure 2.

Note: *Regardless of the indoor unit group address (RMC address), only the indoor unit that is connected to F3, F4 is individually controlled.*

Figure 2. Wiring example: Individual control



Wiring for Group Control

Group control refers to controlling multiple indoor units with the use of one Simple Touch Wired Remote Controller. Figure 3 and Figure 4 provide examples of group control wiring.

Notes:

- *Regardless of the indoor unit group address (RMC address), only the indoor units that are connected to F3,F4 are controlled as a group.*
- *A maximum of 16 indoor units can be controlled as a group.*
- *All indoor units in the group must be connected to a remote controller.*
- For group control with indoor units connected to different outdoor units, the address of each outdoor unit must be unique.

Figure 3. Wiring example: Group control with multiple indoor units connected to one outdoor unit

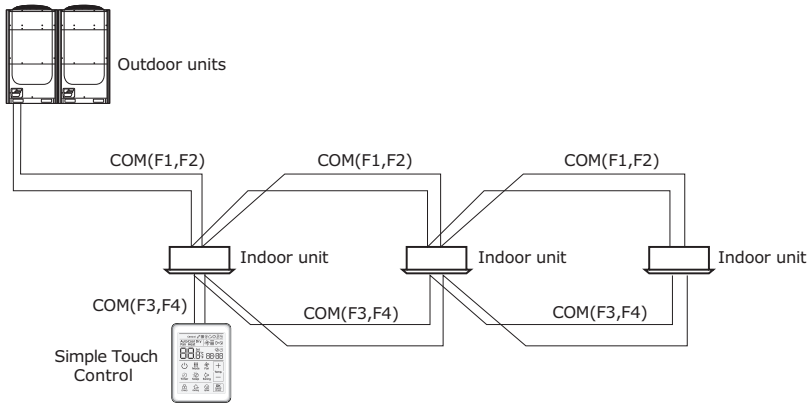
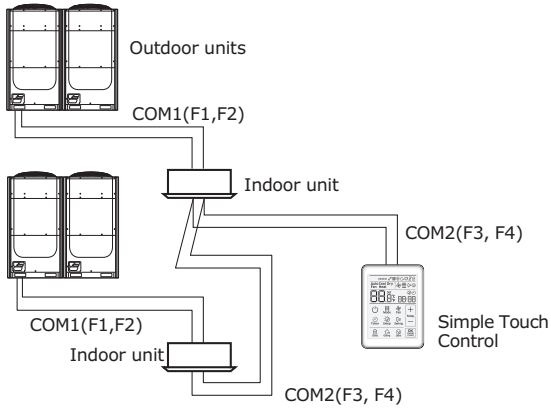


Figure 4. Wiring example: Group control with multiple indoor units connected to different outdoor unit

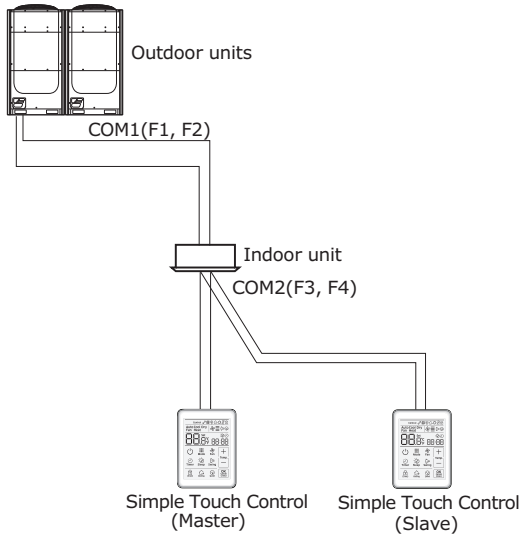


Using Two Simple Touch Wired Remote Controllers for Individual or Group Control

Two Simple Touch Wired Remote Controllers can control one indoor unit or a group of indoor units. For this application, one Simple Touch Wired Remote Controller must be configured as a master and another must be configured as a slave.

For information about configuring this application, refer to "Configuration" on page 11, "Master/Slave" settings.

Figure 5. Wiring example: Two Simple Touch Wired Remote Controllers controlling one indoor unit

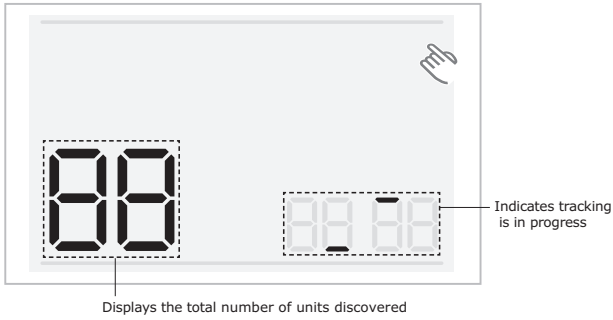


Indoor Unit Tracking

The VRF system uses the term “tracking” for the process of indoor unit discovery and addressing.

- When power is applied to a newly installed remote control, the device automatically begins tracking.
- While tracking is in progress, the quantity of discovered units is indicated on the display. See Figure 6, p. 10. (If a system has master and slave wired controls, only the master displays the total quantity of discovered units.)
- To repeat tracking at any time, press the top right corner (hidden button) for >7 seconds.
- If the number of connected indoor units is increased or decreased after installation, repeat the tracking process.

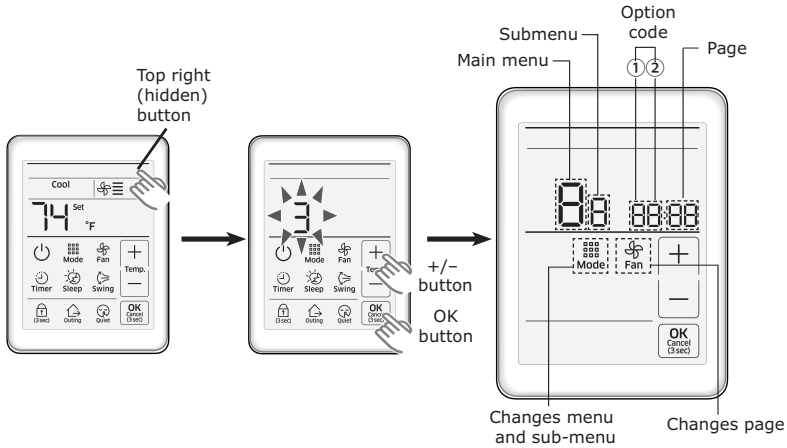
Figure 6. Tracking



Configuration

To change or verify option settings using the SimpleTouch Wired Remote Controller, use the following procedure and refer to Figure 7 and Table 2, p. 12.

Figure 7. SimpleTouch Wired Remote Controller configuration display



3. Access the configuration screen by pressing the top right (hidden) button for >3 seconds.
4. Press the **+**/**–** buttons to select "3". Then press **OK**.

   The display will change to the configuration screen and the main menu will flash "0".

   Important: *If you do not select "3" before pressing **OK**, the screen will return to the normal display and you will not be able to configure settings.*

5. To change the main menu number, press the **+**/**–** buttons.
6. Press the **Mode** button to display the submenu. The submenu will flash "1".

7. Press the **+**/**–** buttons to change the submenu to the desired setting (see Table 2).
8. Press the **Mode** button to display the option code and the page number. The option code flashes "0". The page number appears as "01".

9. Press the **+**/**–** buttons to change the option code setting.

   In the example on the right (menu "1", submenu "1", page "01", option code"1") **cooling only** is being selected for the heating/cooling function (see Table 2).

   Important: *If you leave the page number set to "01", you will be changing the option code setting for the option that has a page number of "01". To change the page number, you must proceed to the next step to change the page number before changing the option code setting.*
10. To change an option code setting that has a different page number, press the **Fan** button once to advance to the next page, and repeat until the desired page number appears. Then press the **+**/**–** buttons to change the option code setting.

In the example on the right, (menu "1", submenu "2", page "02", option code"1"), **auto mode is being disabled** for the wireless remote control (refer to Table 2).

11. Press **OK** to save current settings.

Notes:

- *The **OK** button is invalid for the main menu or the submenu setting screen.*
- *To exit to the normal display mode without saving settings, press the **OK** button for 3 seconds.*

Table 2. Configuration options and settings

Main menu	Sub menu	Function description		Setting		Page	Saved location
				Option code / value	Factory default		
1	1	Wired remote controller setting/ checking (1)	Cooling/heating selection	0: Cooling/ heating 1: Cooling only	0	01	Wired remote controller
			Wireless remote control	0: Disable 1: Enable	1	02	
			Master/Slave wired remote controller	0: Master 1: Slave	0	03	
			Temperature unit	0: °C 1: °F	0	04	
	2	Wired remote controller setting/ checking (2)	Temperature sensor selection	0: Indoor unit 1: Wired remote	0	01	
			Average temperature	0: Disable 1: Enable	0	02	
			Auto mode	0: Disable 1: Enable	1	03	
			Temperature display	0: Temperature setpoint 1: Space temperature	0	04	
	5	Space temperature compensation[(a)]	Temperature control reference (temperature sensor calibration)	-9 to 40°C (16 to 104°F)	Current sensor tempera-ture	01	
			Temperature compensation value	-9.9°C to 9.9°C[(b)]	0	02	
	6	Number of connected units	Number of indoor units	0–16	0	03	None
	7	Temperature increment/decrement unit (°C only)		0: 1°C 1: 0.5°C 2: 0.1°C	0	04	Wired remote controller
	0	Factory option setting		0: Unchanged 1: Factory setting	0	01	None
2	1	Software code		Software code	None	01–03	None
	2	Software version		Software version			

Table 2. Configuration options and settings (continued)

Main menu	Sub menu	Function description		Setting		Page	Saved location
				Option code / value	Factory default		
4	1	Indoor unit address option checking/setting[c]	Target address setting	Target address of IDU (Example: 20021F)	View master	01–03	None
	2		Main address setting/checking	0–4F (hexadecimal)	Main address of target	01	
	3		RMC address setting/checking	0x00–0xFE[d]	RMC address of target	01	
	4		Basic option setting/checking	Option code	Basic option of target[e]	01–20	
	5		Install option setting/checking		Install option of target[e]		
	6		Install(2) option setting/checking		Install(2) option of target[e]		
	7	MCU/Port address setting/checking		MCU address (00–15) Port address (A–F)	MCU address of target	01–02	
5	2	IDU discharge temperature setting/checking[a]	Discharge temperature control	0: Disable 1: Enable	1	01	IDU
			Cooling discharge temperature	8–18°C (46–64°F)[b]	15	02	
			Heating discharge temperature	30–43°C (86–109°F)[b]	38	03	
	3	Fresh duct IDU discharge temperature setting/checking	Cooling discharge temperature	13–25°C (55–77°F)[b]	18	01	
			Heating discharge temperature	18–30°C (64–86°F)[b]	25	02	
	4	AHU IDU discharge temperature setting/checking[a]	Use of discharge temperature control	0: Disable 1: Enable	0	01	AHU IDU
			Cooling discharge temperature	8–25°C (46–77°F)	15	02	
			Heating discharge temperature	18–43°C (64–109°F)	38	03	
7	1	View master setting/checking	Indoor unit view master setting/checking	Indoor unit master address (Ex: 20021F)	None	01–03	None
	2	Mode master IDU setting/checking	Mode master indoor unit checking		None	01–03	
	3		Mode master indoor unit setting[f]	0: Disable 1: Enable 2: Release[g]	None	01	
8	1	Status of automatic air volume setting		1	0	01	Indoor unit
	2	Automatic air volume operation		1	0	01	
	3	Automatic air volume voltage setting		1	2	01	
0	1	Reset	Factory setting	1	0	01	None
	2		Power master reset[h]	1	0	01	
	3		Outdoor units reset	1	0	01	

(a) You must set this option using Celsius degrees (convert the desired Fahrenheit degrees to Celsius and set the value in Celsius); however, if Fahrenheit was chosen as the temperature unit for the display, the value will appear in the adjusted Fahrenheit degrees.
(b) Increments of 1°C.
(c) You can set the target indoor unit by selecting submenu 1.

(d) Addressing uses hexadecimal numbering:

Number	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Corresponding hexadecimal address	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

(e) There are 24 available digits on the Simple Touch Wired Remote Controller display. Only 6 digits can be displayed at a time. Press the **Fan** button to advance to the next page. Digits 1, 7, 13, and 19 are not displayed and cannot be set. All other digits correspond to a page number on the display, as shown in the following table.

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

(f) This setting is available only when only one indoor unit is connected and that indoor unit is not operating.
(g) If the mode master unit is enabled (setting "1"), you can release the setting by selecting setting "2".
(h) This setting supplies optimized power to wired remote controller when multiple indoor units are connected to wired remote controller in a group.

Error Codes

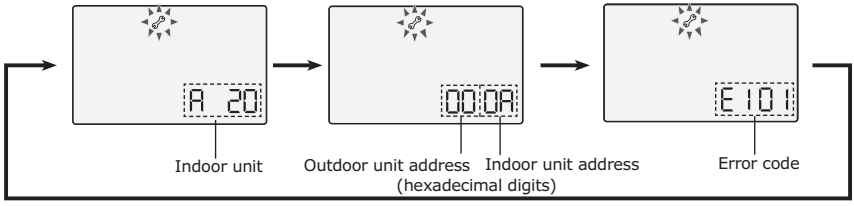
If an error code is generated, the error code appears on the display of the controller.

For an explanation of error codes, refer to the Technician Utilities Tool (TUT) or the VRF service manual (VRF-SVM046).*

Indoor/Outdoor Unit Error

The address of the indoor or outdoor unit alternates with the error code on the display. In the example in Figure 8, indoor unit #10, which is connected to outdoor unit #00, has generated error code E101.

Figure 8. Error code example



Note: *Addressing uses hexadecimal numbering:*

Number	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Corresponding hexadecimal address	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Wired Remote Controller Error

If the wired remote controller has an error, only the error code is displayed, as shown in Figure 9.

Figure 9. Example: error at wired remote controller

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We are committed to using environmentally conscious print practices.

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