White-Rodgers 70 Series™ Thermostat Line Extension

EMERSON

Business and Product Overview

70 Series Thermostat Line Extension

EMERSON™

Introduction

70 Series™ Thermostat Line Extension

The 70 Series™ line extension provides modern design easy-to-use thermostats ideal for contractor installation in single family homes and multi-unit housing. The new models are easy to install and represent excellent value from a reliable brand.
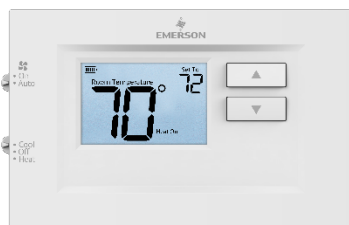
- **Easy Installation**
  All models are easy to install & set-up with a built-in level and universal back plate providing the opportunity for future thermostat upgrade.
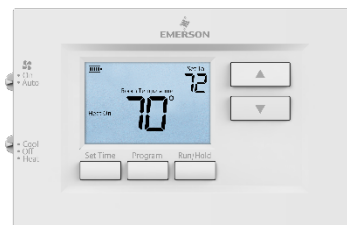- **Large, Backlit Display**
  Modern design with a large, easy-to-read screen with a bright backlit display.
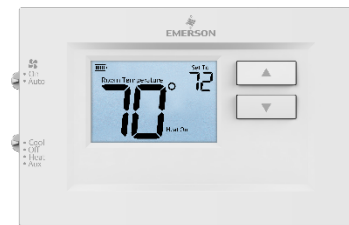- **Proven Performance**
  Over 75 years of control experience along with our ± 1° temperature accuracy guarantee.

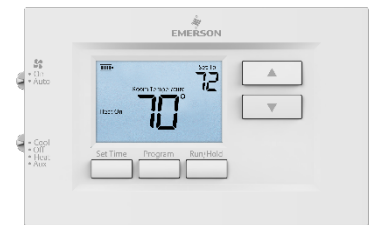1F75C-11NP

1F75C-11PR

1F75H-21NP

1F75H-21PR

70 Series™ Thermostats at a Glance

Our Most Popular Thermostat Family is Growing

ORIGINAL 70 SERIES™
– *7 thermostats* –
1E78-140 • 1E78-144 • 1E78-151
1F72-151 • 1F78-144 • 1F78-151 • 1F79-111

NEW LINE EXTENSION
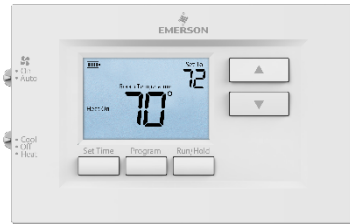– *4 thermostats* –
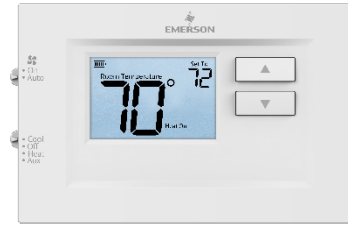1F75C-11NP • 1F75C-11PR
1F75H-21NP • 1F75H-21PR
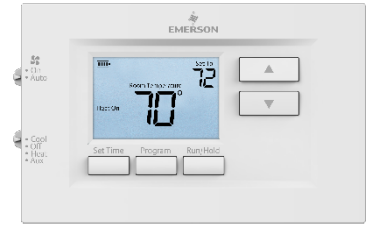
70 Series Thermostat Line Extension Product Overview
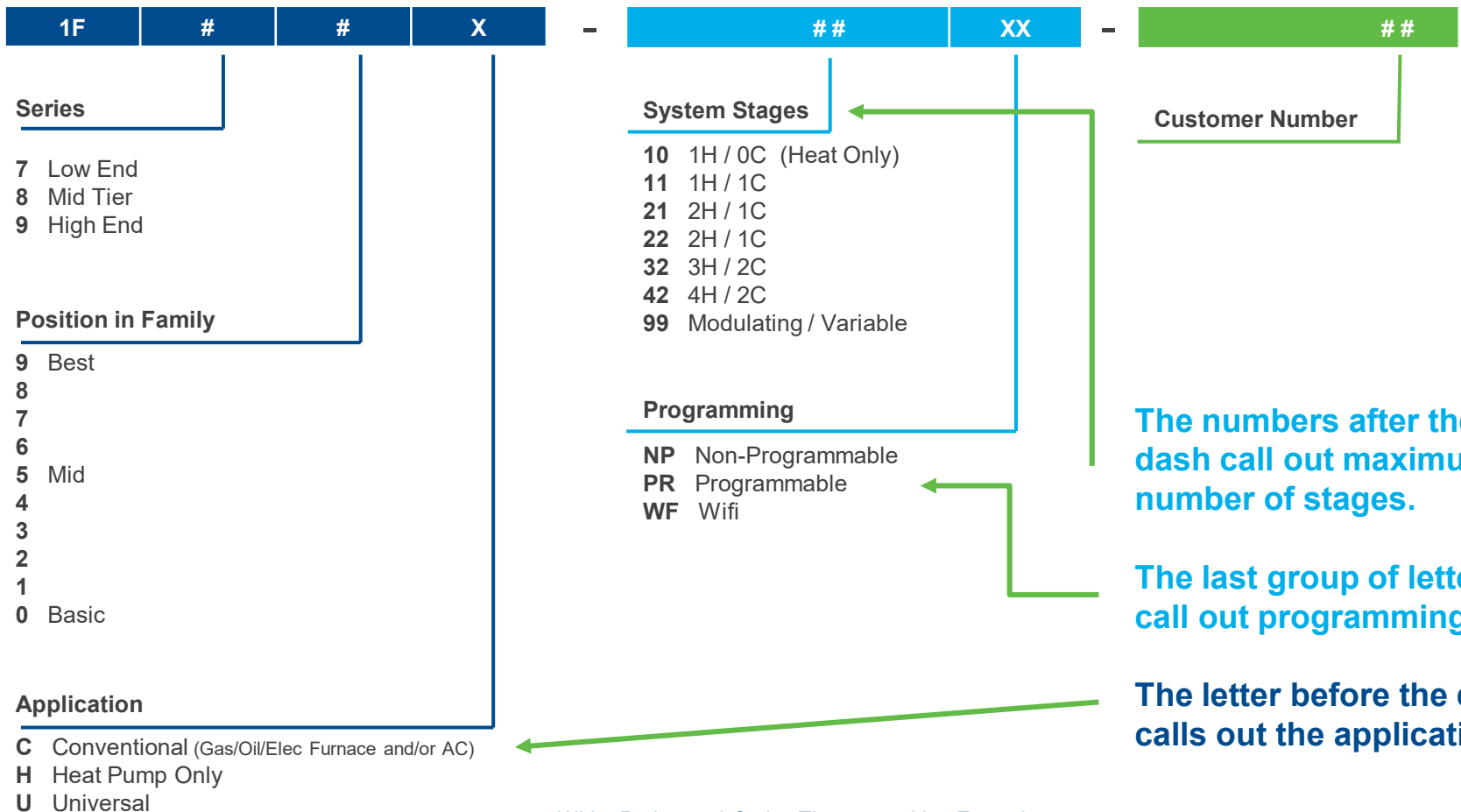

| 1F75C-11NP | 1F75C-11PR | 1F75H-21NP | 1F75H-21PR |

Model	Program Options				Max Stages Heat/Cool		Applications			Power Source		Selectable Performance Features						Comfort & Convenience Features				
Model Number	7 Day	5 + 1 + 1 Day	5 + 2 Day	Programmable	Conventional	Heat Pump	Gas / Oil / Electric	3 Wire Zone	Millivolt	Battery	Hardwired (24V)	Auto Changeover	Programmable Fan	EMR / Early Start Program	Temperature Limits	Humidity Control (H) Humid (D) Dehumid	Dual Fuel Control	Remote Sensor	Filter Change Reminder	Auto DST Adjust	Keypad Lockout	Cont. Backlight w/Common	Permanent Memory
1F75C-11NP					●		●		●	●	●			●	●							●	●
1F75C-11PR	●	●		●	●		●		●	●	●			●	●				●			●	●
1F75H-21NP						●	●			●	●			●	●		●					●	●
1F75H-21PR	●	●		●		●	●			●	●			●	●		●		●			●	●

Smart Part Numbers Make it Easy to Select the Right Product

Example: **1F75C-11PR**, 1H/1C Programmable

Smart Part Numbers make it easy to select the right thermostat <u>and</u> tell what you need to know about any Model Number in the Series.

| 1F | # | # | X | – | ## | XX | – | ## |

Series

7   Low End
8   Mid Tier
9   High End

Position in Family

9   Best
8
7
6
5   Mid
4
3
2
1
0   Basic

Application

C   Conventional (Gas/Oil/Elec Furnace and/or AC)
H   Heat Pump Only
U   Universal

System Stages

10   1H / 0C (Heat Only)
11   1H / 1C
21   2H / 1C
22   2H / 1C
32   3H / 2C
42   4H / 2C
99   Modulating / Variable

Programming

NP   Non-Programmable
PR   Programmable
WF   Wifi

Customer Number

The numbers after the dash call out maximum number of stages.

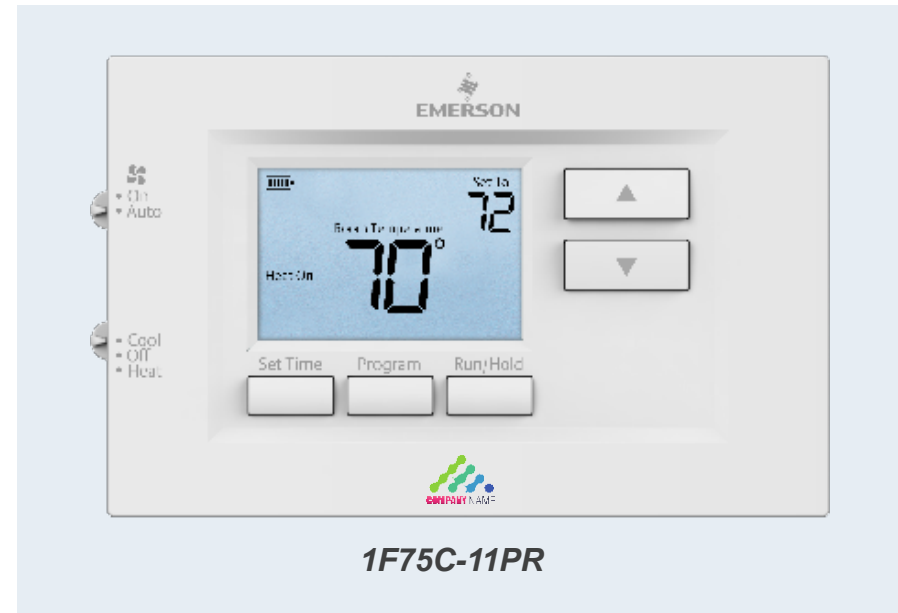**The last group of letters call out programming.**

The letter before the dash calls out the application.

Install the Right Thermostat for You and Your Customer

How Do You Benefit?

- **Contractor Branding**
  - Get the next service call by placing your company information directly on the thermostat. Customize your 70 Series thermostats at ProContractorBranding.com.
- **Training**
  - Free, NATE Certified training courses available through White-Rodgers Education Central or contact your Territory Manager to set up training at your location or at select wholesalers.
- **Support**
  - Customer and technical support is available seven days a week at 888-725-9797.
  - 5-year limited warranty for HVAC professionals.
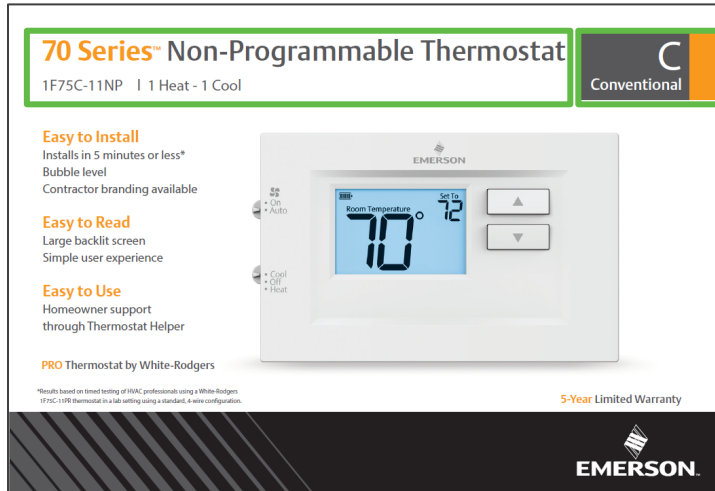
**Easy to Install
Easy to Read
Easy to Use**

1F75C-11PR

Cross Reference

Emerson	Resideo	Pro1
1F75C-11NP	TH1110E1000 TH3110D1008	T601
1F75C-11PR	TH2110DH1002	T605-2
1F75H-21NP	TH1210DH1001 TH3210D1004	T621-2
1F75H-21PR	TH2210DH1000	T625-2

Heat Pump models have combined O/B terminals.

Packaging

- The header calls out stages and programming options

- Look for the Application Icon on the upper right corner

Conventional – 1H/1C

- Furnaces and Single Stage Heat Pumps

Heat Pump – 2H/1C

- Heat Pump Only

To verify thermostat features, look at the side panel of the box.

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1F75C-11NP					●		●		●	●	●				●							●	●

Terminal Designations: RC RH Y W O/B G C

2 AA Batteries Included

emersonthermostats.com

WR Mobile App

Always up-to-date and easy to use:

- Mobile App
- White-Rodgers Website

Your resource for:

- Product information and spec sheets
- Complete Cross Reference
- OEM compatibility
- Installation information and videos
- Wiring diagrams

Download:

- Go to your app store
- Type in **WR Mobile**
- Install the app

OR

- Open your camera
- Hold it over the QR code
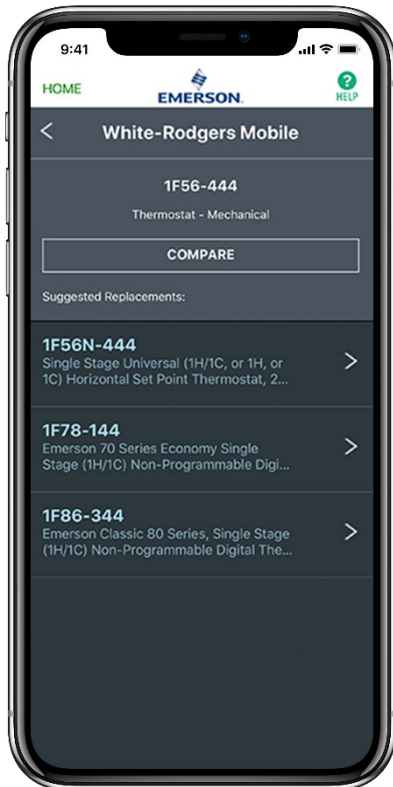- Tap "Open" on the pop-down
- Install the app

WR Mobile App

Easy to use!

Search by OEM, Competitive, or White-Rodgers Model Number

Product Number
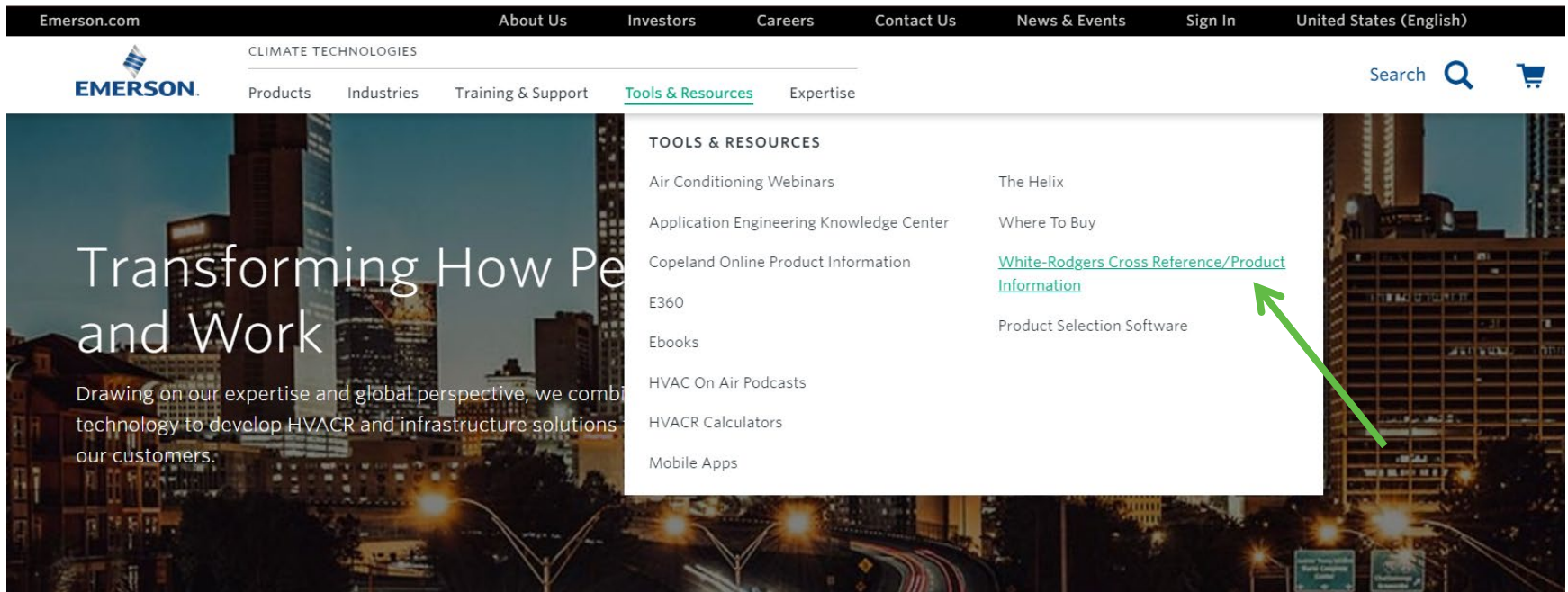
Scrollable Product List

WR Replacement
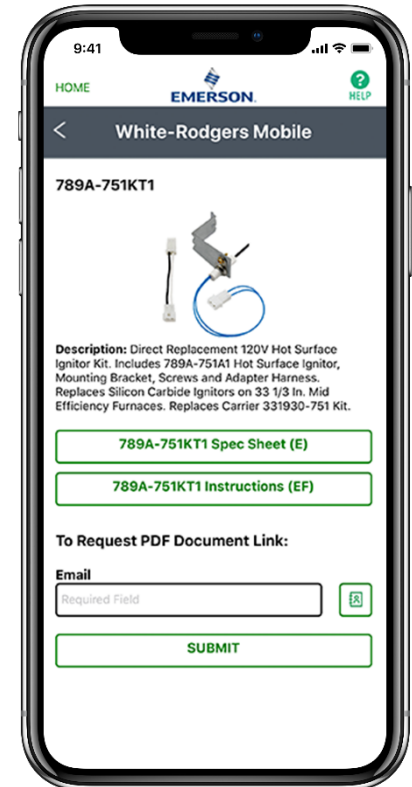
White-Rodgers Cross Reference

Go to: www.whiterodgers.com

- Hover over Tools & Resources
- Click on: White-Rodgers Cross Reference/Product Information
- Enter the Model Number or click on: Search Replacement Heating Controls by Major OEM Brand

Why Contractors Trust White-Rodgers

Industry Leading Products

- Used by more OEM's
- Offering the widest range of Universal Replacement Controls

Ease of Installation

- Simple, easy to understand instructions

Product Reliability

- Quality Control assures reliable products

Affordable

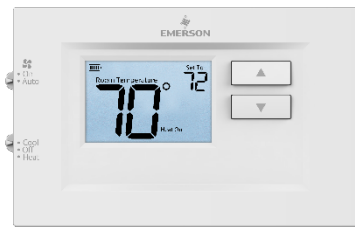- Competitive pricing

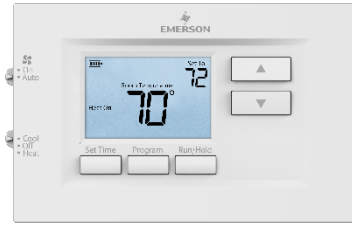**Supported by Knowledgeable Representatives**

- Contractor direct phone support
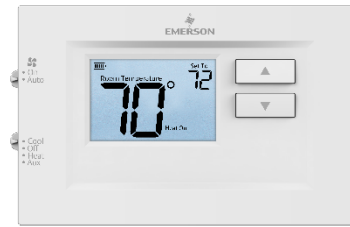
Technical

70 Series Thermostat Line Extension

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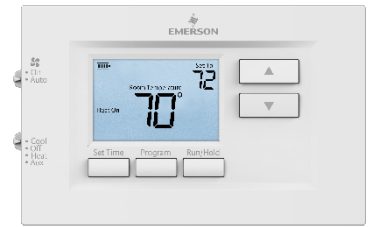
70 Series Thermostat Line Extension Product Overview
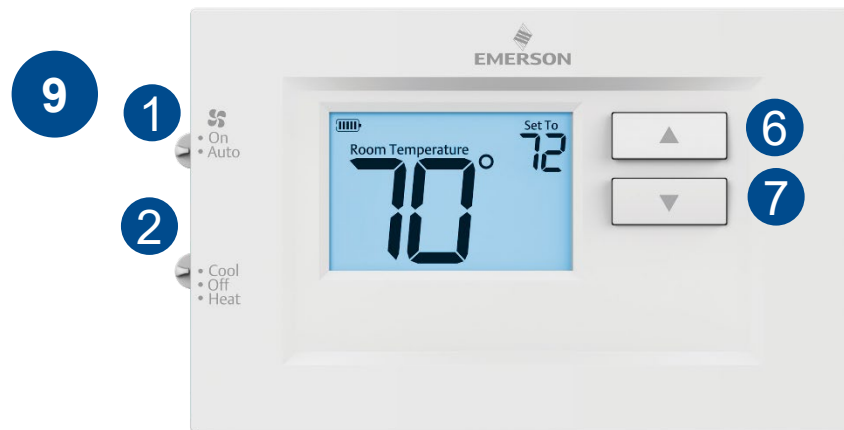

1F75C-11NP **1F75C-11PR** **1F75H-21NP** **1F75H-21PR**

| Model	Program Options				Max Stages Heat/Cool		Applications			Power Source		Selectable Performance Features							Comfort & Convenience Features				
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1F75C-11PR	●	●		●	●		●			●	●			●	●				●			●	●
1F75H-21NP					●	●				●	●			●	●		●					●	●
1F75H-21PR	●	●		●	●	●				●	●			●	●		●		●			●	●

70 Series™ Line Extension Features

Thermostat buttons and switches include:

1. FAN switch selects On or Auto
2. SYSTEM switch selects Cool, Off, or Heat
3. SET TIME button sets the correct time
4. Use the PROGRAM button to set a schedule
5. The RUN/HOLD button starts or stops the programmed schedule
6. The UP button raises the temperature setting
7. The DOWN button lowers the temperature setting
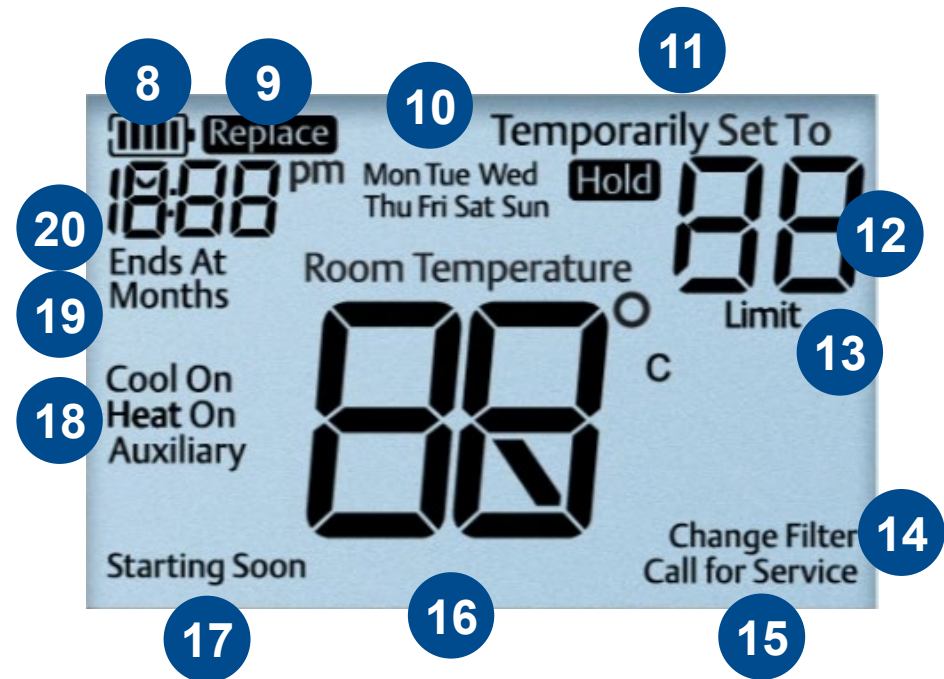

1F75C-11NP
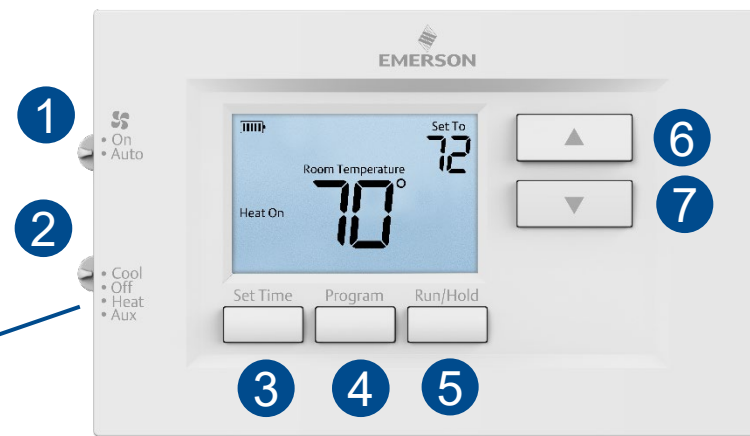
1F75H-21PR

Heat Pump models include Aux Heat switch.

Thermostat Display- Programmable

The display features on this thermostat include:

8. Battery Status indicator
9. Replace Battery indicator
10. Indicates the day of the week selected for programming
11. Temporarily Set To indicates the thermostat will override the temperature until the next programmed time period. (min. 2 hours)
12. Temperature Setpoint
13. Indicates setpoint limit has been reached
14. "Change Filter" indicator
15. "Call for Service" refer to Installation Guide troubleshooting
16. Current room temperature
17. "Starting Soon" indicates 5-minute short cycle time delay to protect compressor
18. Indicates Cool, Heat, or Auxiliary Heat is running
19. "Ends At" appears along with calculated end time
20. Months appears while selecting the number of months before "Change Filter" flashes

Overview

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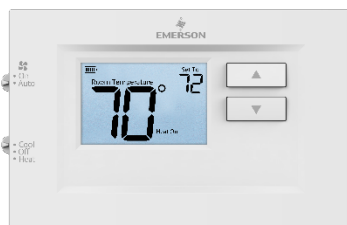
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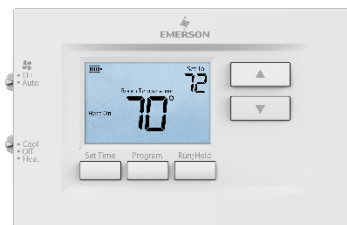- **Large, Backlit Display**
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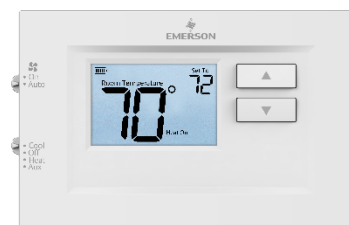- **Proven Performance**
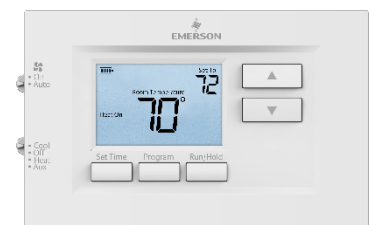 Over 75 years of control experience along with our ± 1° temperature accuracy guarantee.
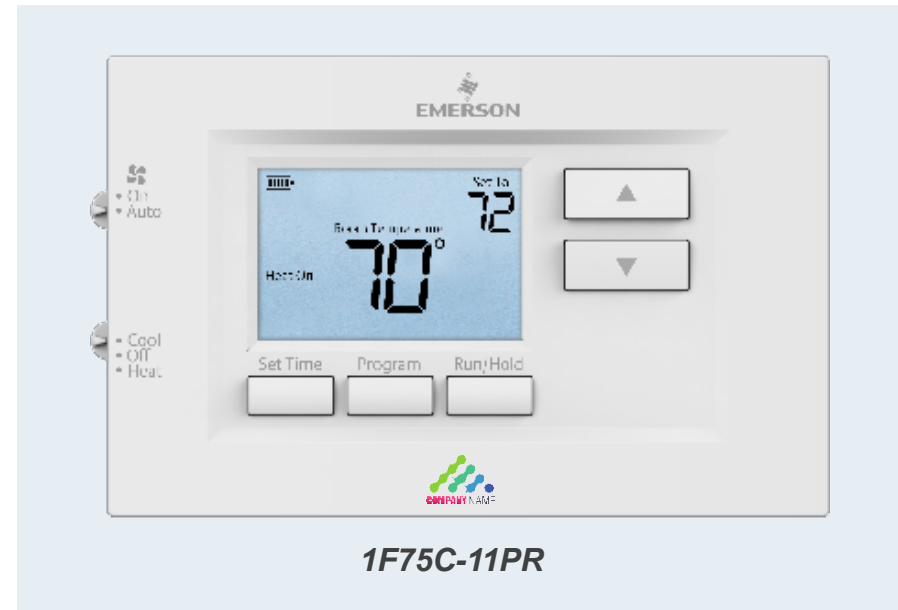
| 1F75C-11NP | 1F75C-11PR | 1F75H-21NP | 1F75H-21PR |

Install the Right Thermostat for You and Your Customer

How Do You Benefit?

- **Contractor Branding**
  - Get the next service call by placing your company information directly on the thermostat. Customize your 70 Series thermostats at ProContractorBranding.com.
- **Training**
  - Free, NATE Certified training courses available through White-Rodgers Education Central or contact your Territory Manager to set up training at your location or at select wholesalers.
- **Support**
  - Customer and technical support is available seven days a week at 888-725-9797.
  - 5-year limited warranty for HVAC professionals.

Easy to Install
Easy to Read
Easy to Use

1F75C-11PR

Technical Details - Installer Menu Options

Menu	Description	Setting	Options
30 CR	Heat Cycle Rate (how often the heat will turn on)	MEd	SLOW – slow MEd – medium FAS – fast
32 CR	Aux Cycle Rate (how often the auxiliary heat will turn on)	MEd	SLOW – slow MEd – medium FAS – fast
35 CR	Cool Cycle Rate (how often the cooling will turn on)	MEd	SLOW – slow MEd – medium FAS – fast
50 CL	Compressor Lockout (protects the compressor from short cycling)	OFF	On – 5-minute display OFF – no delay
60 dF	Duel Fuel Logic (turn On when using gas as the auxiliary heat source)	OFF	On – gas auxiliary heat OFF – electric auxiliary heat
65	Maximum Heat Limit (maximum set point for heat mode)	99	47 to 99
66	Minimum Cool Limit (minimum set point for cool mode)	45	45 to 97
74	Schedule Type (set as either 7-Day, 5-1-1 Day or Non-Programmable)	5	7 – 7 day 5 – 5-1-1 day 0 – Non-Programmable
76 E	Early Start (starts heating or cooling early so your programmed temperature is reached by the programmed time)	Off	On – start early OFF – start at program period time
79	Fahrenheit or Celsius	°F	°F – Fahrenheit °C - Celsius
81	Temperature Display Adjustment (adjust the displayed "Room Temperature")	0	-5 to +5
83 dL	Continuous Display Light (keep the backlight always on – "C" wire required)	OFF	On – always on OFF - momentarily
86	Change Air Filter (set up a monthly reminder)	OFF	1 to 12 – reminder time OFF – no filter reminder

Technical Details - Installer Menu

Menu Name	Menu #	Conventional		Heat Pump	
		1F75C-11NP	1F75C-11PR	1F75H-21NP	1F75H-21PR
CR – Heat Cycle Rate	30	●	●	●	●
CR – Aux Cycle Rate	32			●	●
CR – Cool Cycle Rate	35	●	●	●	●
CL - Compressor Lockout	50	●	●	●	●
dF – Dual Fuel Logic	60			●	●
Maximum Heat Limit	65	●	●	●	●
Minimum Cool Limit	66	●	●	●	●
Schedule Type	74	●			●
E – Early Start	76		●		●
Fahrenheit or Celsius	79	●	●	●	●
Temperature Display	81	●	●	●	●
dL – Continuous Display Light	83	●	●	●	●
Change Air Filter	86		●		●

Application Switches

Conventional Models

Gas / Elec Switch

This switch controls the main blower sequence of operation

- **GAS** – equipment operates fan on a call for heat

  - Typically for fossil fuel furnaces

- **ELEC** – thermostat operates the fan on a call for heat

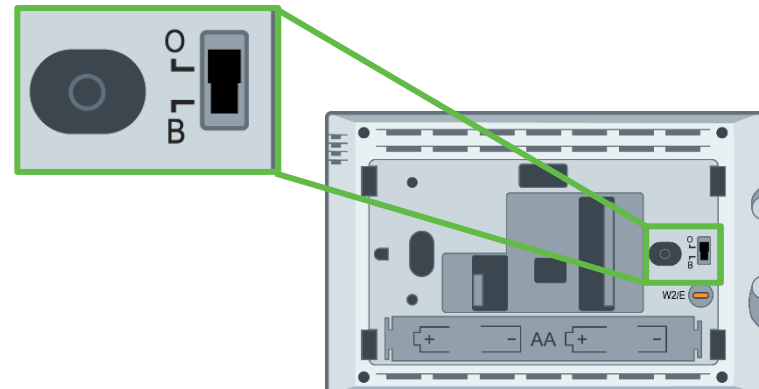 - Typically for electric furnaces or

    heat pumps

Heat Pump

O / B Switch

This switch controls the position of the reversing valve

- **"O"** position – energizes reversing valve in the cooling mode

- **"B"** position – energizes the reversing valve in the heating mode

These switches are on the back of the thermostat and must be configured correctly for the application.

Specs

ELECTRICAL RATING
Hardwire: 20 to 30 VAC NEC Class II, 50/60 Hz
Battery Power: mV to 30 VAC NEC CLASS II, 50/60 Hz

SYSTEM CONFIGURATIONS
Factory setting: 2-stage heat (heat
                    pump/resistance heat),
                    1-stage cool
Alternate setting: 1-stage heat
                    1-stage cool, 2-speed fan

DISPLAY TEMPERATURE RANGE
32˚F to +99˚F (0˚C to 37˚C)

RATED DIFFERENTIALS (@ 6˚F / HR) Fast Med Slow
Heat (Conventional Gas/Oil/Elect):   0.5˚F 0.75˚F 1.9˚F
Cool (Central Air):   0.9˚F 1.2˚F 1.7˚F
Heat Pump (Heat and Cool):   0.9˚F 1.2˚F 1.7˚F
Heat Pump (Aux):   0.5˚F 0.75˚F 1.9˚F
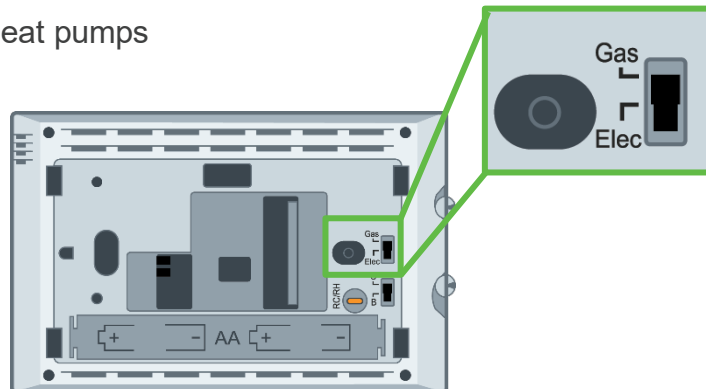
TERMINAL LOAD
Staging Models: 1.5 A per terminal
                2.5 A per maximum all terminals combined

OPERATING AMBIENT
32˚F to +105˚F
(0˚C to +41˚C)

OPERATING HUMIDITY
90% non-condensing max

SHIPPING TEMPERATURE
-20˚F to +150˚F
(-29˚C to +65˚C)

THERMOSTAT DIMENSIONS
3-3/4”H x 6”W x1-1/8”D

ACCESSORIES
Wallplate: F61-2663 (6-3/4” x 4-1/2”)
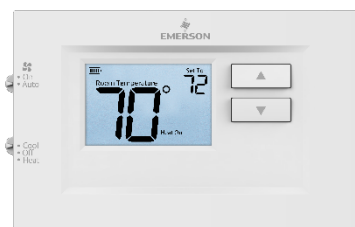Thermostat Guard: F29-0198

SETPOINT RANGE
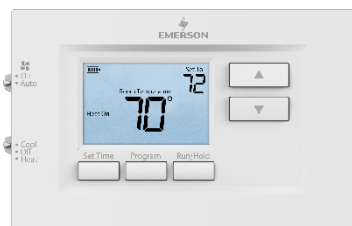45˚F to 99˚F (7˚C to 37˚C)

Install

70 Series Thermostat Line Extension
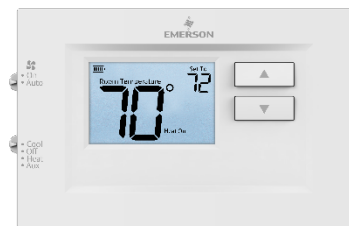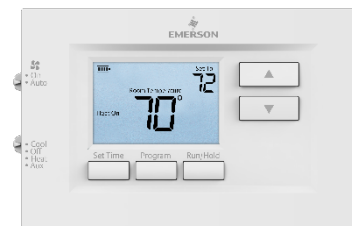
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70 Series™ Line Extension Product Overview

1F75C-11NP

1F75C-11PR

1F75H-21NP

1F75H-21PR

Model Number	Program Options				Max Stages Heat/Cool		Applications			Power Source		Selectable Performance Features							Comfort & Convenience Features				
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1F75C-11NP					●		●		●	●	●			●	●							●	●
1F75C-11PR	●	●		●	●		●		●	●	●			●	●				●			●	●
1F75H-21NP						●	●			●	●			●	●		●					●	●
1F75H-21PR	●	●		●		●	●			●	●			●	●		●		●			●	●

What's in the Box?

What's in the Box?

- 70 Series Thermostat
- Backplate
- Two 1-inch screws
- Two wall anchors
- Installation guide
- Two AA batteries
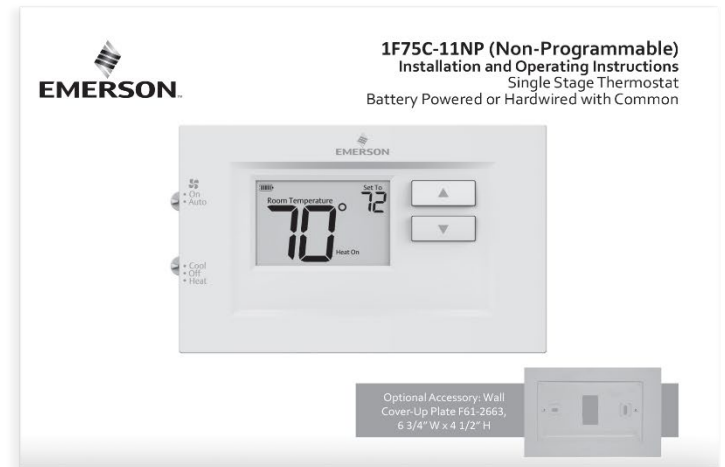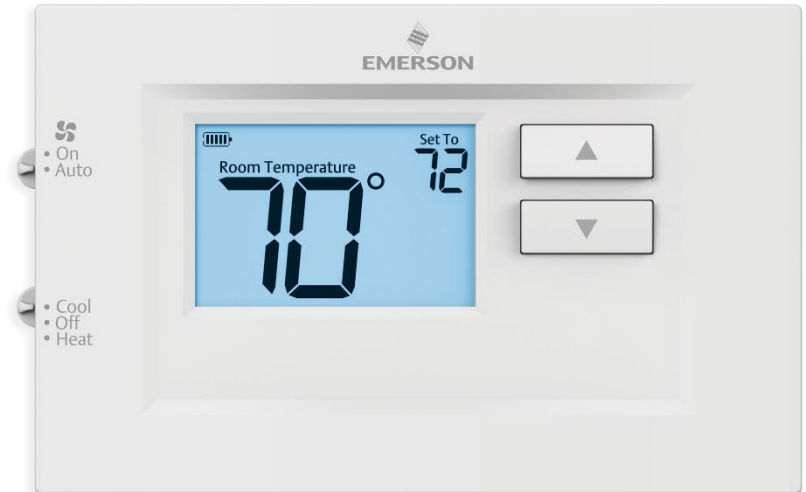
Disconnect Power

1 Disconnect electric power to the furnace.

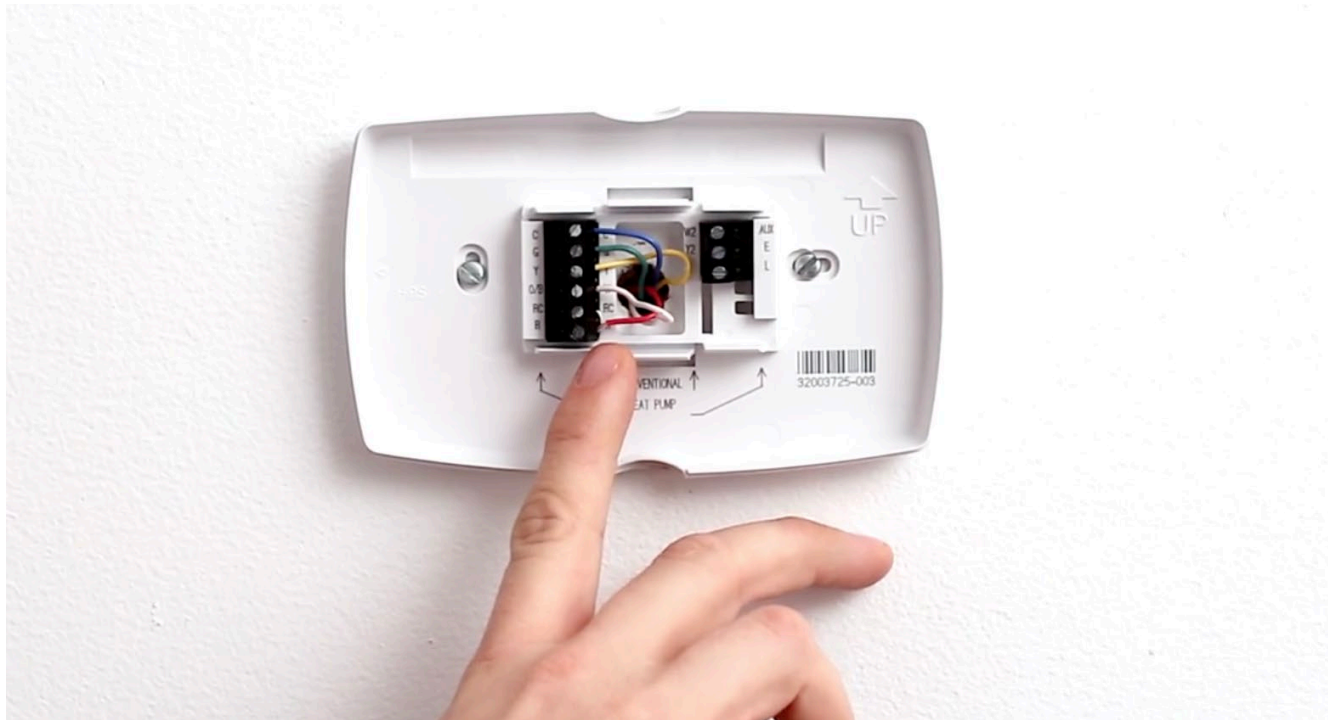# Remove Old Thermostat Cover

2 Remove the old thermostat's cover. Some covers pull off easily, while others may need to be released by using a screwdriver.
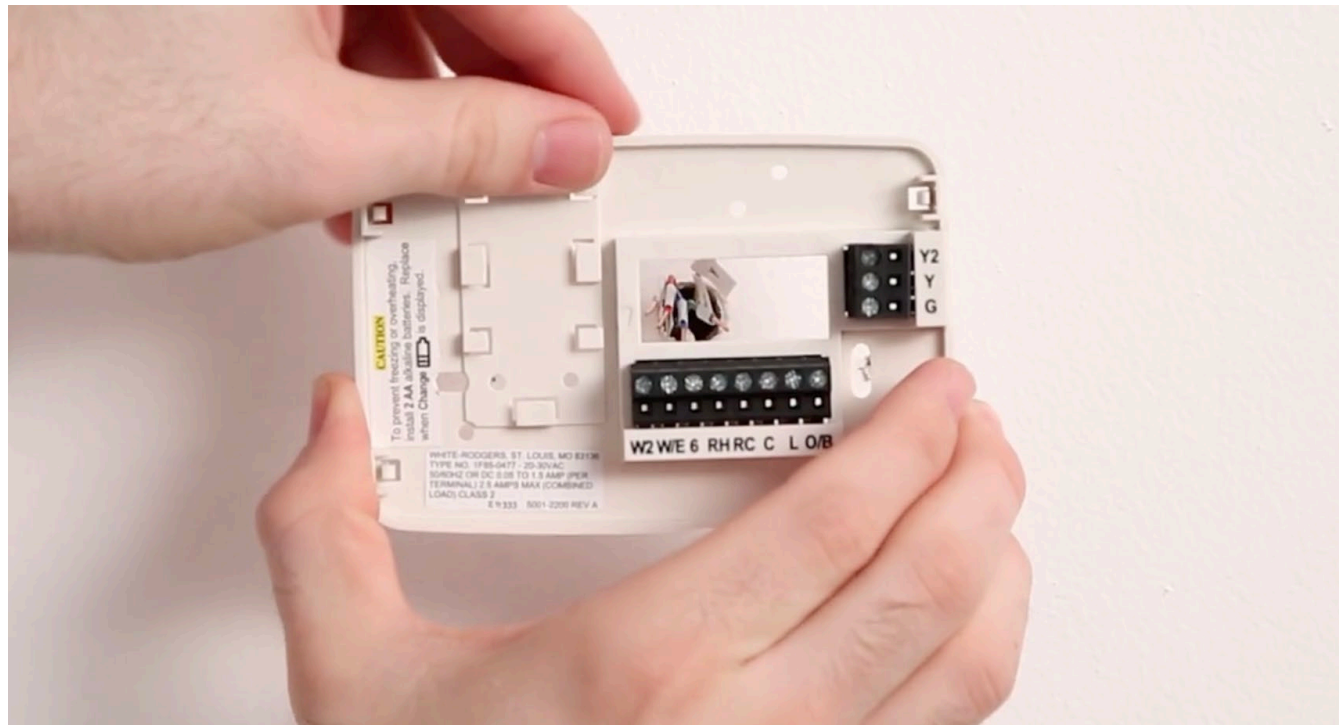
Make a Note of the Wiring

3 Make note of the existing wiring or take photo before disconnecting the old thermostat base.

Disconnect Old Thermostat Base

4 Remove the screws holding the old thermostat base to the wall. Then carefully pull the old base off the wall, sliding the wires through the opening in the base.

Mount New Thermostat

5 Mount the new thermostat base to the wall using the supplied screws, and drill new holes if necessary. Use the built-in bubble level to ensure the base is mounted level on the wall.
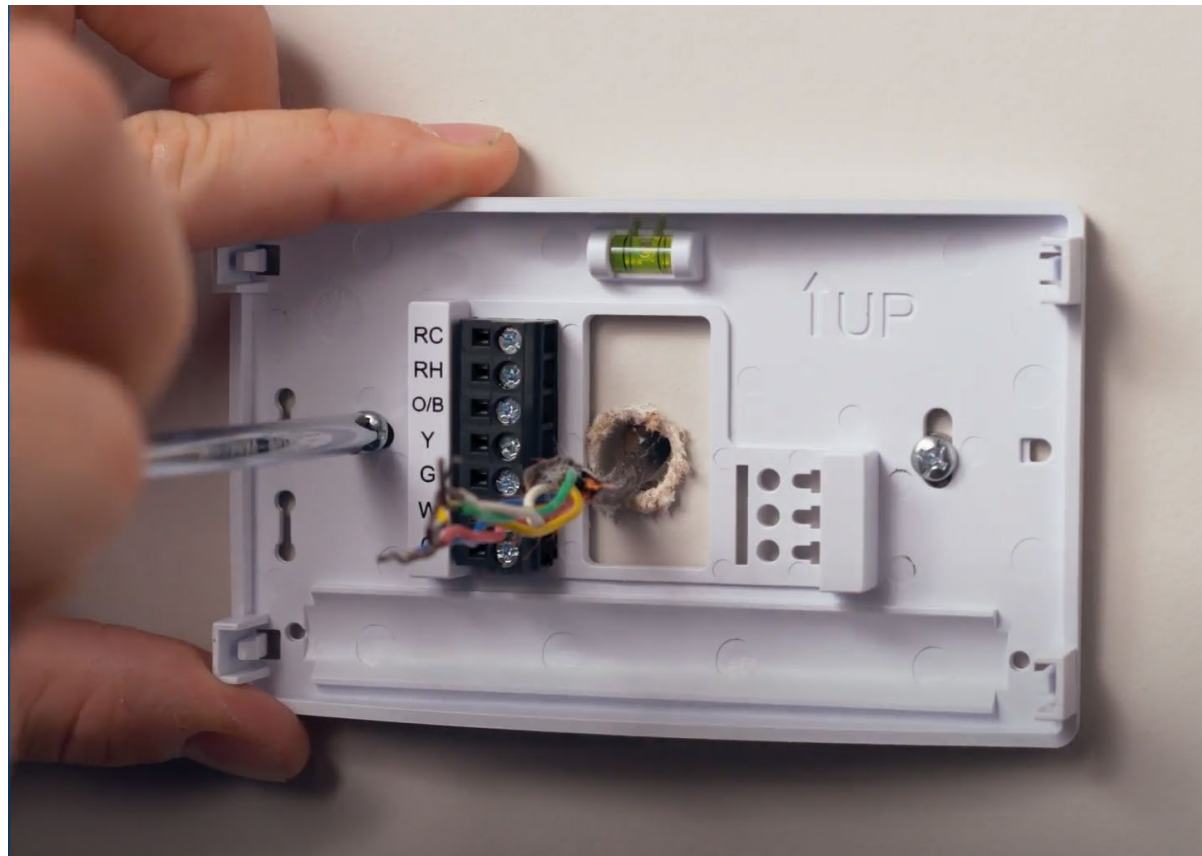
Connect Wires to Terminals

6 One by one, insert each wire into the corresponding terminal on the new thermostat. Tighten each terminal to secure the wire in place - you can test this by giving the wire a gentle tug.

Attach the Cover

7 Push the front cover onto the thermostat base until secure. Turn the power back on.

Wiring

Tables shown describe the thermostat terminal functions.

Conventional Thermostats (1F75C Models)	
Terminal Designations	Terminal Function
RC*	Power for Cooling
RH*	Power for Heating
O/B	Changeover Terminal-Energized in Heat (B) or Cool (O) for Heat Pump or Damper Systems
Y**	Cool Relay
G	Fan Relay
W**	Heat Relay
C	Common wire for 24V (optional with batteries)

Heat Pump Thermostats (1F75H Models)	
Terminal Designations	Terminal Function
R	Power for Heating and Cooling
O/B	Changeover Terminal-Energized in Heat (B) or Cool (O) for Heat Pump or Damper Systems
Y	Heat and Cool Mode 1st Stage Compressor
G	Fan Relay
E*	Auxiliary only Heat Mode (Emergency Heat)
C	Common wire for 24V (optional with batteries)
W2	Heat Mode – 2nd stage (Auxiliary)

*If system has separate RC and RH wires cut RC/RH Jumper on back of thermostat.
**For heat pump systems, add a jumper wire to connect terminals Y and W.

Application Switches

Conventional Models

Gas / Elec Switch

This switch controls the main blower sequence of operation

- **GAS** – equipment operates fan on a call for heat

  - Typically for fossil fuel furnaces

- **ELEC** – thermostat operates the fan on a call for heat

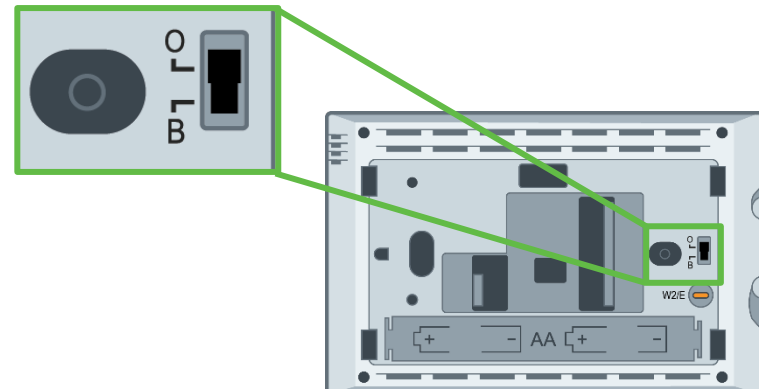 - Typically for electric furnaces or heat pumps
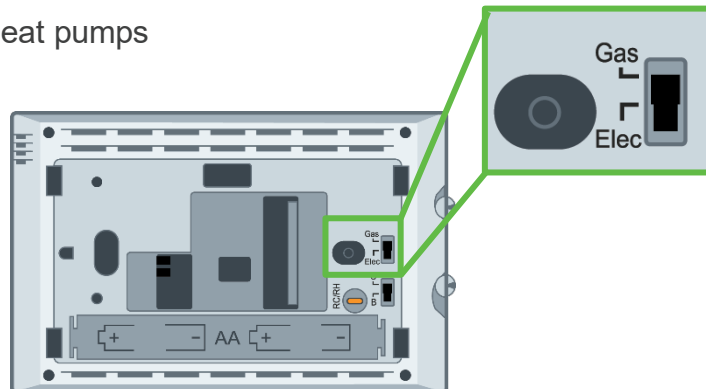
Heat Pump

O / B Switch

This switch controls the position of the reversing valve

- **"O"** position – energizes reversing valve in the cooling mode

- **"B"** position – energizes the reversing valve in the heating mode

These switches are on the back of the thermostat and must be configured correctly for the application.

Setting Time and Day

1. Press TIME button once. Display will show hour only.
2. Press and hold the UP or DOWN button until you reach the correct hour and AM/PM designation.
3. Press TIME again. Display will show minutes only.
4. Press and hold the UP or DOWN button until you reach the correct minutes.
5. Press TIME again. Display will show the day of the week.
6. Press the UP or DOWN button until you reach the current day of the week.
7. Press RUN/HOLD once. The display will show the correct time.

1F75H-21PR
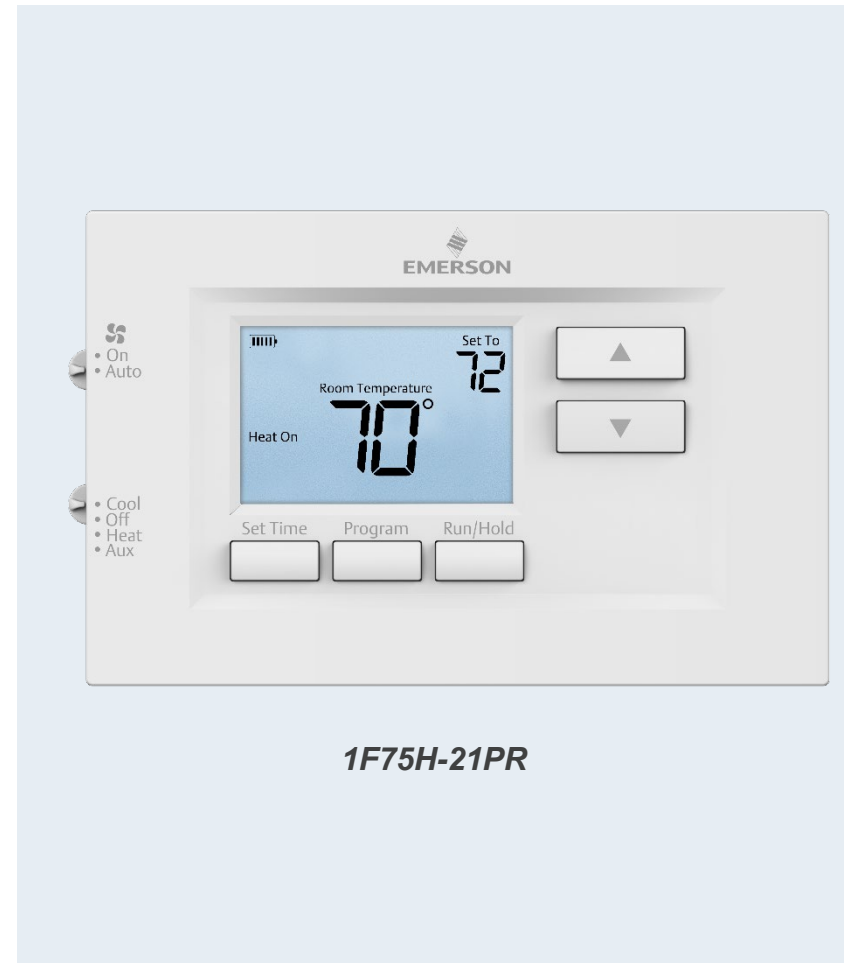
Setting the Schedule

Programmable (PR) Models Only

1. Move SYSTEM switch to HEAT
2. Press PROGRAM once. "Mon Tue Wed Thu Fri" (indicating weekday program) will appear in the display.
3. Press the UP or DOWN button to select the temperature for the 1st heating program period.
4. Press PROGRAM once (the programmed time will flash). Press the UP or DOWN button to select your time in 15 minute increments.
5. Press PROGRAM once. The currently programmed start time and setpoint temperature for the 2nd heating program period will appear.
6. Repeat steps 3 and 4 to select the start time and heating temperature for the 2nd heating program period.
7. Repeat steps 3-5 for the 3rd and 4th heating program periods.
8. Press PROGRAM once. "Sat" (Saturday) will appear in the display, along with the start time for the 1st heating period and the currently programmed temperature.
9. Repeat steps 3-7 to complete Saturday heating programming.
10. Press PROGRAM once to change to "Sun" (Sunday) heating programming and repeat steps 3-7 to complete Sunday programming.
11. When you have completed entering the heating program, press RUN/HOLD.
12. Move system switch to COOL and follow steps 1-11 to enter the cooling program.
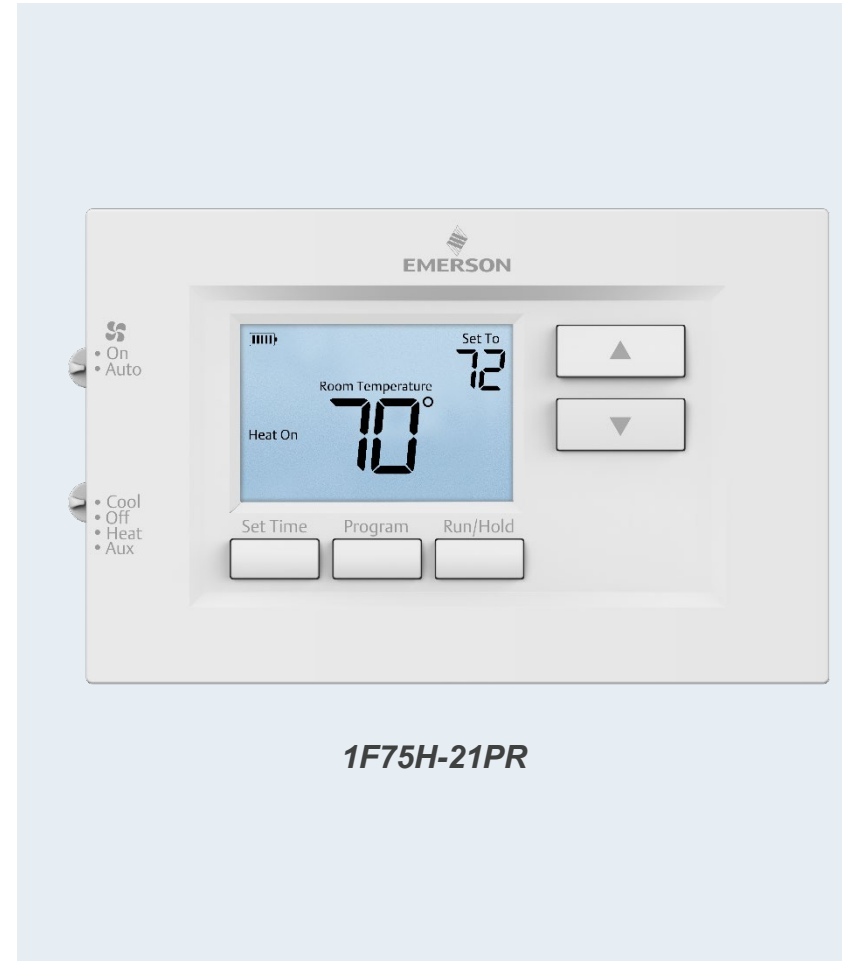
1F75H-21PR

Installation and Operating Instructions

Instructions include:

Thermostat Installation	2-4
Wiring	2
Installer Menu	3-4
Using the Thermostat	5
Thermostat Overview	5
Troubleshooting	6-7
Homeowner Help Line	8

Troubleshooting

Symptom	Possible Cause	Corrective Action
No Heat No Cool No Fan (common problem)	1.) Blown fuse or tripped circuit breaker 2.) Furnace power switch to OFF 3.) Furnace blower compartment door panel loose or not properly installed 4.) Loose connection to thermostat or system	1.) Replace fuse or reset breaker 2.) Turn switch to ON 3.) Replace door panel in proper position to engage safety interlock or door switch 4.) Tighten Connections
No Heat	1.) System Switch not set to Heat 2.) Loose connection to thermostat or system 3.) Heating System requires service or thermostat requires replacement	Verify thermostat and system wires are securely attached. Diagnostic: Set System Switch to Heat and raise the setpoint above room temperature. Within five minutes the thermostat should make a soft click sound and "Heat On" should appear on display. This sound indicates the thermostat is operating properly. If the thermostat does not click, try the reset operation listed below. If the thermostat does not click after being reset, contact your heating and cooling service person or place of purchase for a replacement. If the thermostat clicks, contact the furnace manufacturer or a service person to verify the heating system is operating correctly.
No Cool	1.) System Switch not set to Cool 2.) Loose connection to thermostat or system 3.) Cooling System requires service or thermostat requires replacement	Verify thermostat and system wires are securely attached. Diagnostic: Set System Switch to Cool and lower setpoint below room temperature. Same procedures as diagnostic for "No Heat" condition except set the thermostat to Cool and lower the setpoint below the room temperature. There may be up to a 5 minute delay before the thermostat clicks in Cooling if the compressor lock-out option is selected in the installer menu. (see INSTALLER MENU, item 50)

Troubleshooting

Symptom	Possible Cause	Corrective Action
Heat, Cool or Fan Runs Constantly	Possible short in wiring, thermostat, heat, cool or fan system	Check each wire connection to verify they are not shorted or touching other wires. Reset the thermostat, replace thermostat if condition persists.
Thermostat Display & Thermometer Disagree	Thermostat display requires adjustment	Display can be adjusted +/-5°. See Installer Menu item 81
Furnace (Air Conditioner) Cycles Too Fast or Slow (narrow or wide temperature swing)	The location of the thermostat and/or the size of the Heating System may be influencing the cycle rate	Digital thermostats provide precise control and cycle faster than older mechanical models. The system turns on and off more frequently, but runs for a shorter time. If you would like to increase cycle time, choose SLO for slow cycle in the Installer menu. (Reference menu items 30 & 35) If an acceptable cycle rate is not achieved verify equipment is sized properly.
"Call for Service" icon appears on displayed	1.) Heating system is not able to heat the space to within 10 degrees of the setpoint within 2 hours 2.) Cooling system is not able to cool the space to within 10 degrees of the setpoint within 2 hours 3.) If "--" is displayed for the Room Temperature, a replacement thermostat is needed 4.) None of the buttons operate on the thermostat 5.) If "Call for Service" is flashing, compressor self diagnostic is detecting an issue	1.) See corrective action for "No Heat" 2.) See corrective action for "No Cool" 3.) Replace thermostat 4.) Make sure keypad lockout is not turned on (denoted by icon) 5.) Verify the equipment is operating correctly