Emerson 80 Series Thermostats

EMERSON.

Business and Product Overview

EMERSON

Introduction

The 80 Series provides the easiest selection, stocking, and installation in a space cluttered with too many models, features, and brands, with the features contractors and homeowners ask for, search for, and buy.

- **Large Display**
  - Bright backlight
  - High contrast

- **Selectable Programming**
  - Choice of 7 Day, 5+1+1 Day or Non-Programmable standard on all programmable models

- **Dual Fuel (HP/Gas Furnace) Control**
  - No sensor required
  - Standard on all staging models

- **Advanced Features**
  - Auto-Changeover on Universal models
  - Keypad Lockout
  - Temperature Limits

- **Easy to Install**
  - Built in level indicator
  - Simple set up menu
  - Terminal block connections

| Sensi WiFi | Universal | Heat Pump | Conventional |

# Why Convert from the Competition?

Physically showing customers the products demonstrates the key differentiators of this product line. Other manufacturers have displays with "hot spots" or uneven backlight quality that make them difficult to view.

- Competitively priced
- Most requested features
- Easier to install and configure
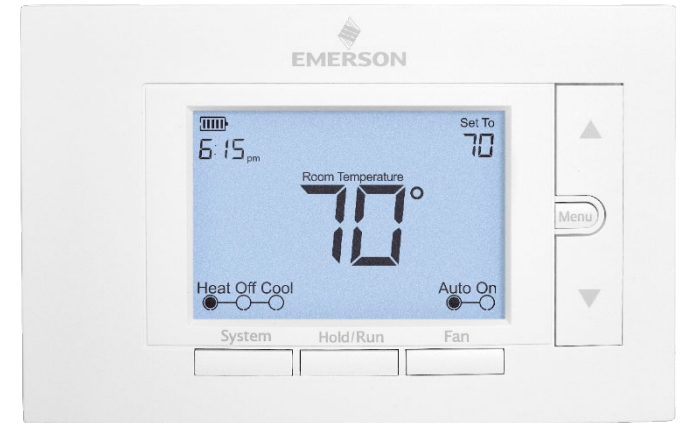
1F85U-42PR

Quality & Precision Control
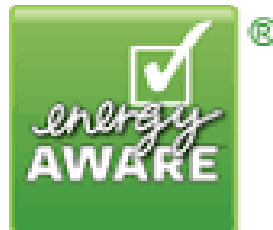
Support When & Where You Need It

Better Feature Set, Minimal SKUs vs Competition

	Conventional 1H/1C			Heat Pump 2H/1C			Universal 2H/2C			Universal 3+H/2C		
	EMR	HW	Pro1	EMR	HW	Pro1	EMR	HW	Pro1	EMR	HW	Pro1

Conventional Thermostats

	Conventional Thermostats				
Brand	**Emerson**	**Honeywell**	**Honeywell**	**Pro1**	**Honeywell**
Model #	1F83C-11NP / 1F83C-11PR	TH3110D	TH5110D / TH6110D	T701 / T705	T1
Display Size	4.5 sq. in.	1.3 sq. in.	2.0 – 5.1 sq. in.	4.0 sq. in.	2.4 qu. In.
Conventional Stages	1H/1C	1H/1C	1H/1C	1H/1C	1H/1C
Heat Pump Stages	1H/1C	1H/1C	1H/1C	1H/1C	1H/1C
Auto-Changeover			✔		
Keypad Lockout	✔				
Temperature Limits	✔		✔		✔
Dual Fuel					
Why We Win	Large, high quality display with advanced features	Smaller screen size, fewer features	NP - Smaller screen size Prog – more expensive	Poor display quality, fewer features	Square shape doesn't cover previous thermostat footprint, small display

Heat Pump Thermostats

Heat Pump Thermostats				
Brand	**Emerson**	**Honeywell**	**Honeywell**	**Honeywell**
Model #	1F83H-21NP / 1F83H-21PR	TH3210D	TH5220D / TH6220D	T4
Compatibility	Heat Pump	Heat Pump	Universal	Universal
Display Size	4.5 sq. in.	1.3 sq. in.	3.8 – 5.1 sq. in.	3.9 sq. in.
Conventional Stages	-	-	2H/2C	1H/1C
Heat Pump Stages	2H/1C	2H/1C	2H/1C	2H/1C
Auto-Changeover			✔	✔
Keypad Lockout	✔			✔
Temperature Limits	✔		✔	
Dual Fuel	✔			
Why We Win	Large, high quality display with advanced features and dual fuel	Small display, fewer features	More expensive with extra cooling stage	Square shape doesn't cover previous thermostat footprint

Universal Thermostats

	Universal (2H/2C)		Universal (3H+/2C)		
Brand	**Emerson**	**Honeywell**	**Emerson**	**Honeywell**	**Honeywell**
Model #	1F85U-22NP / 1F85U-22PR	TH5220D / TH6220D	1F85U-42NP / 1F85U-42PR	TH5320D / TH6320D	T6
Compatibility	Universal	Universal	Universal	Universal	Universal
Display Size	5.0 sq. in.	3.8 - 5.1 sq. in.	5.0 sq. in.	5.1 sq. in.	5.4 sq. in.
Conventional Stages	2H/2C	2H/2C	2H/2C	2H/2C	2H/2C
Heat Pump Stages	2H/1C	2H/1C	4H/2C	3H/2C	3H/2C
Auto-changeover	✔	✔	✔	✔	✔
Keypad Lockout	✔		✔		✔
Temperature Limits	✔	✔	✔	✔	✔
Dual Fuel	✔		✔		✔
Why we win	Features, aesthetics and dual fuel	More expensive, fewer features	Features, aesthetics, 4th stage & dual fuel	More expensive, fewer features	Square shape doesn't cover previous thermostat footprint

Emerson 80 Series at a Glance

Application	U Universal		H Heat Pump	C Conventional
Model Number	1F85U-42PR	1F85U-42NP	1F85U-22PR	1F85U-22NP
Stages (H/C)	4H / 2C	4H / 2C	2H / 2C	2H / 2C
Selectable Program	7, 5-1-1 or None		7, 5-1-1 or None	
Program Periods	4 or 2		4 or 2	
Temp. Limits	✓	✓	✓	✓
Keypad Lockout	✓	✓	✓	✓
Dual Fuel (Logic Based)	✓	✓	✓	✓
Auto-change	✓	✓	✓	✓
Model Number	1F85U-42PR	1F85U-42NP	1F85U-22PR	1F85U-22NP
Selectable Program	7, 5-1-1 or None	-	7, 5-1-1 or None	-

TECH TIP: Did you know that the 80 Series thermostats share the same subbase pin out as Sensi Wi-Fi 1F87U-42WF? Pull off any 80 Series stat, snap in a Sensi, and configure.
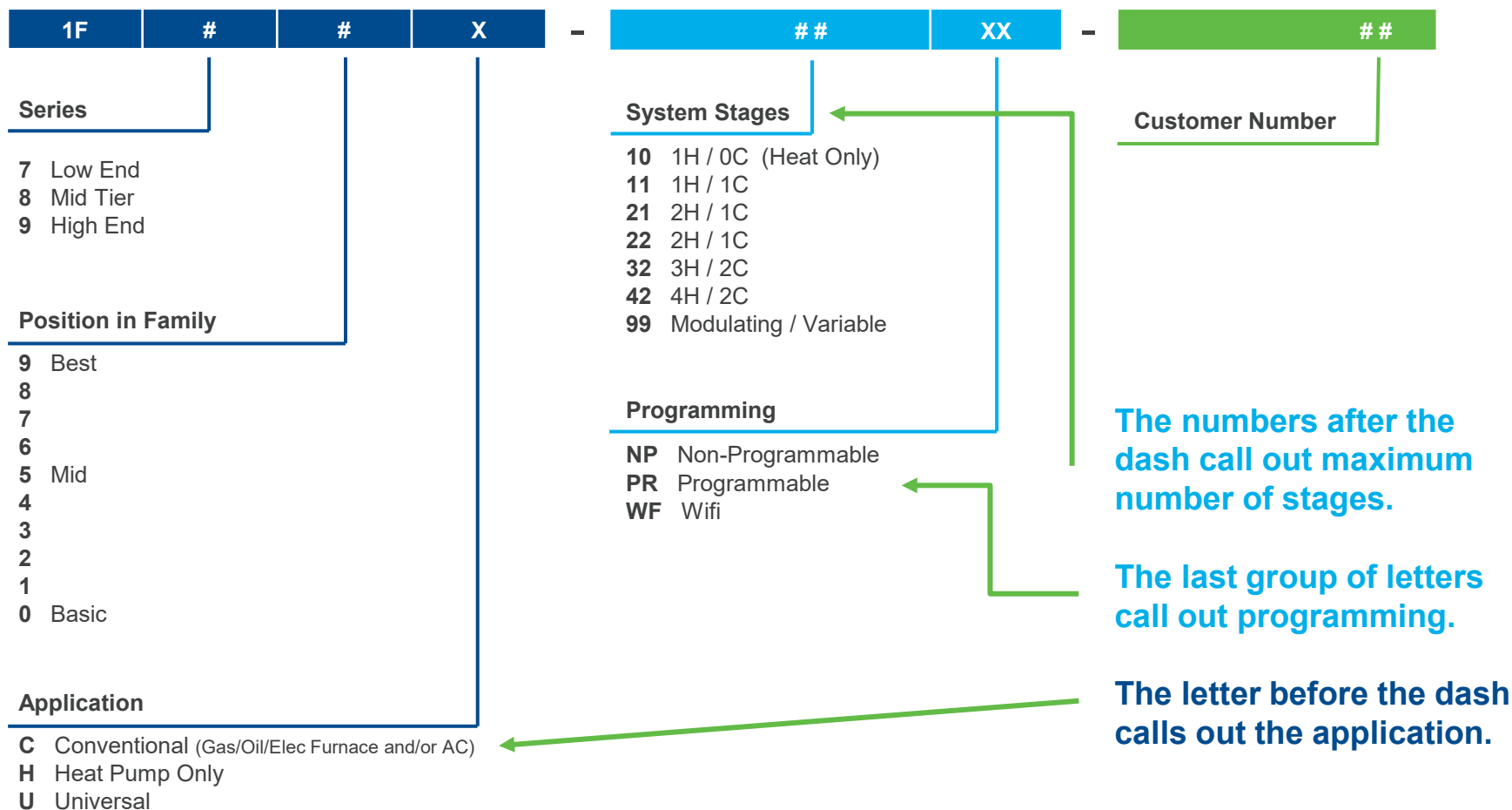
Smart Part Numbers Make it Easy to Select the Right Product

Example: **1F85U-42PR** Universal, 4H/2C 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.**

Matching 80 Series Thermostats to Your Application

Conventional Models are Single Stage Heat and Cool for Conventional Gas/Oil/Electric or Heat Pumps with no Aux Heat.
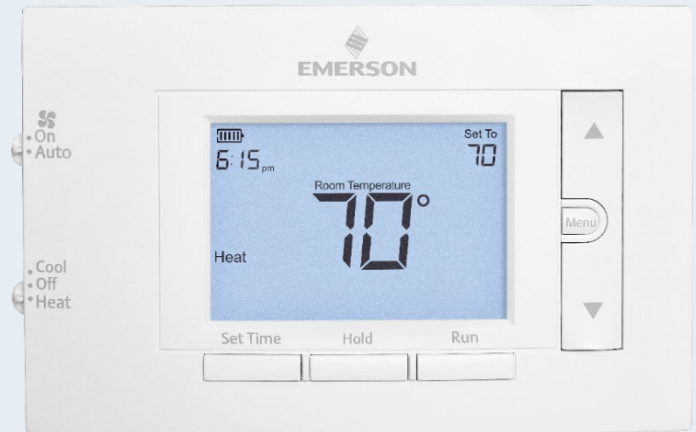
Programmable Models all have the same options of 7 independent day or 5+1+1 day programming, or can be set to non-programmable configuration.

Selecting the right thermostat is easy. All you need to know is:

- Heat pump or traditional gas/oil/electric furnace and A/C?
- How many stages Heat/Cool?
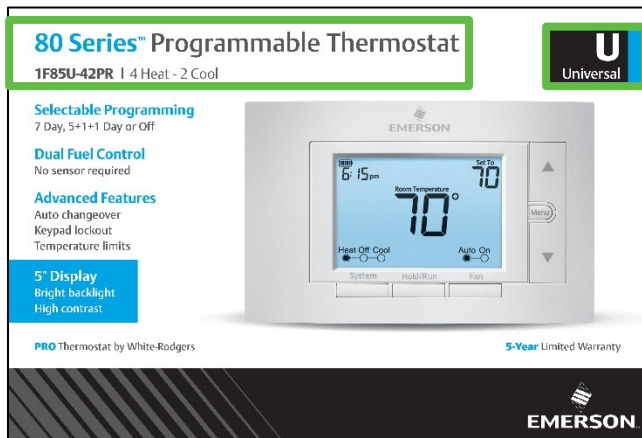- Programmable or Non-Programmable?
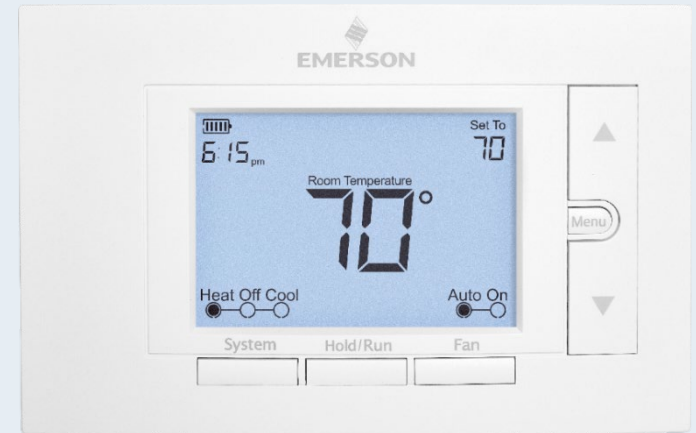
1F85U-42PR

1F83H-21PR

Packaging Design Aids Selection/Application

- The header calls out stages and the programming options

80 Series™ Programmable Thermostat
1F85U-42PR | 4 Heat - 2 Cool

Selectable Programming
7 Day, 5+1+1 Day or Off

Dual Fuel Control
No sensor required

Advanced Features
Auto changeover
Keypad lockout
Temperature limits

5" Display
Bright backlight
High contrast

EMERSON

PRO Thermostat by White-Rodgers   **5-Year** Limited Warranty

EMERSON

- Look for the Application Icon on the upper left

U Universal

Universal - 4H/2C or 2H/2C
- Furnaces and Heat Pumps

H Heat Pump

Heat Pump – 2H/1C
- Heat Pump Only

C Conventional

Conventional – 1H/1C
- Furnaces and Heat Pumps

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

Model	Program Options			Max Stages Heat/Cool		Applications				Power Source		Selectable Performance Features							Comfort & Convenience Features				
Model Number	7 Day	5 + 1 + 1 Day	Non-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
1F85U-42NP			✓	2/2	4/2	✓	✓	✓	✓	✓	✓			✓		✓				✓	✓	✓

Terminal Designations RC RH C W/E W2 Y Y2 O/B/6 G L

2 AA Batteries Included

emersonthermostats.com

Quick Reference Guide

Be sure to check out our Quick Reference guide with all of our thermostats, available on our Wholesale Resource Center:

https://climate.emerson.com/documents/wr-0889-visorcard-divide-en-3599656.pdf

The White-Rodgers Quick Reference Guide includes specs and features on all 80 Series thermostats including:

1 System type   **2** Features   **3** Terminals

	PROGRAMMING OPTIONS			SYSTEM COVERAGE	MAX STAGES HEAT/COOL			MODEL	APPLICATIONS			POWER SOURCE					PERFORMANCE FEATURES					COMFORT & CONVENIENCE FEATURES					TERMINALS
	Programmable (P) and/or Non-Programmable (NP)	Program Options	Periods Per Day	Single Stage Multi-Stage Heat Pump Universal[1]	Conventional Single Stage	Conventional Multi-Stage	Heat Pump		Gas/Oil/Electric	3-Wire Zone	Millivolt Compatible	Battery	Hardwired (24V)	Power Stealing	Auto Changeover	Programmable Fan	Comfort Circulating Fan	Temperature Setpoint Limits	Keypad Lockout	Dual Fuel Control (L)Logik, (O) Outdoor	Aux. Heat Lockout with Outdoor Sensor[*]	Remote Sensor	Filter-Change Reminder	Auto DST Adjust	Continuous-Backlight w/Common Wire	Permanent Memory	Display Size	Terminals
Sensi™ Wi-Fi Thermostats																												
72	P, NP	7 Day, NP Geofencing	8 Max	Universal	1/1	2/2	4/2	1F95U-42WF	●	●[2]			●		●			●	L				●	●	●	●	5.8"	RC, RH, C, W/E, W2, Y, Y2, O/B/6, G, L
	P, NP	7 Day, NP Geofencing	8 Max	Universal	1/1	2/2	4/2	1F87U-42WF	●	●[2]		●	●	●	●			●	L				●	●	●	●	5"	RC, RH, C, W/E, W2, Y, Y2, O/B/2, G, L
80 Series™ Thermostats																												
	P, NP	7, 5+1+1, NP	4, 2, 0	Universal	1/1	2/2	4/2	1F85U-42PR	●	●	●	●	●		●			●	●	L			●		●	●	5"	RC, RH, C, W/E, W2, Y, Y2, O/B/6, G, L
		7, 5+1+1, NP	4, 2, 0	Universal	1/1	2/2	2/1	1F85U-22PR	●	●	●	●	●		●			●	●	L			●		●	●	5"	RC, RH, C, W/E, W2, Y, Y2, O/B/6, G, L
		7, 5+1+1, NP	4, 0	Heat Pump			2/1	1F83H-21PR	●			●	●					●	●	L			●		●	●	4.5"	R, C, W2, E, Y, O/B, G, L
		7, 5+1+1, NP	4, 0	Single Stage	1/1		1/1	1F83C-11PR	●		●	●	●					●	●				●		●	●	4.5"	RC, RH, C, W, Y, O/B, G
	NP	NP	0	Universal	1/1	2/2	4/2	1F85U-42NP	●	●	●	●	●		●			●	●	L					●	●	5"	RC, RH, C, W/E, W2, Y, Y2, O/B/6, G, L
		NP	0	Universal	1/1	2/2	2/1	1F85U-22NP	●	●	●	●	●		●			●	●	L					●	●	5"	RC, RH, C, W/E, W2, Y, Y2, O/B/6, G, L
		NP	0	Heat Pump			2/1	1F83H-21NP	●			●	●					●	●	L					●	●	4.5"	R, C, W2, E, Y, O/B, G, L
		NP	0	Single Stage	1/1		1/1	1F83C-11NP	●		●	●	●					●	●						●	●	4.5"	RC, RH, C, W, Y, O/B, G

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
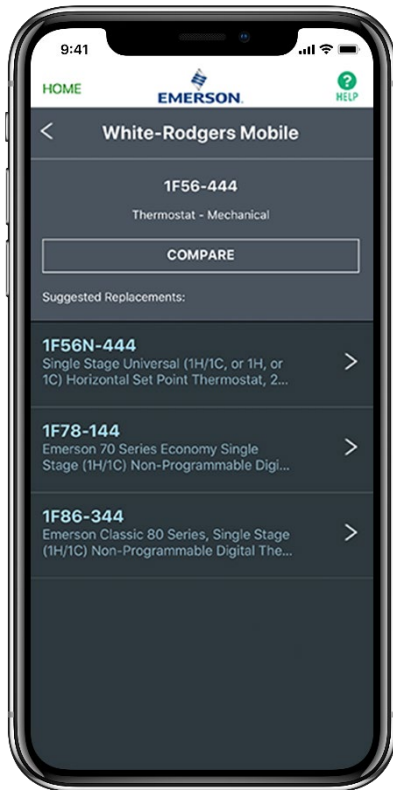
Scrollable Product List

WR Replacement

80 Series Thermostats
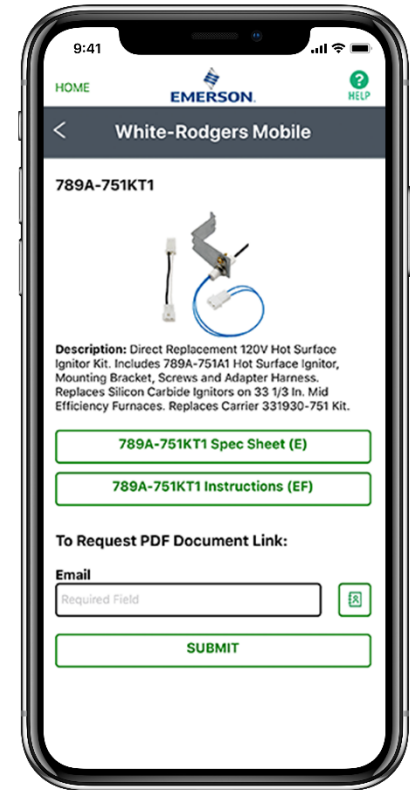
White-Rodgers Cross Reference

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

Wholesale Resource Site
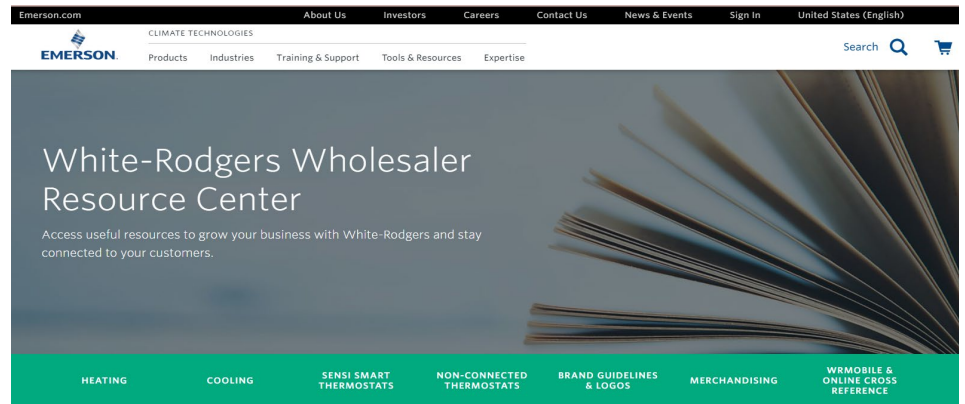
Access useful resources to grow your business.

Visit: https://climate.emerson.com/en-us/brands/white-rodgers/white-rodgers-wholesaler-resource-center

You'll find videos, stocking lists and product launch information for the following product families:

- Heating Controls
- Cooling Controls
- Sensi Smart™ Thermostats
- Traditional Thermostats
- Contractor Rewards
- Product Merchandising

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

Introduction

The 80 Deries provides the easiest selection, stocking, and installation in a space cluttered with too many models, features, and brands, with the features contractors and homeowners ask for, search for, and buy.

- **Large Display**
  - Bright backlight
  - High contrast

- **Selectable Programming**
  - Choice of 7 Day, 5+1+1 Day or Non-Programmable standard on all programmable models

- **Dual Fuel (HP/Gas Furnace) Control**
  - No sensor required
  - Standard on all staging models

- **Advanced Features**
  - Auto-Changeover on Universal models
  - Keypad Lockout
  - Temperature Limits

- **Easy to Install**
  - Built in level indicator
  - Simple set up menu
  - Terminal block connections

| Sensi WiFi | Universal | Heat Pump | Conventional |

Overview

80 Series Professional Thermostats

| Application	U Universal		H Heat Pump	C Conventional
Model Number	1F85U-42PR	1F85U-42NP	1F85U-22PR	1F85U-22NP
Stages (H/C)	4H / 2C	4H / 2C	2H / 2C	2H / 2C
Selectable Program	7, 5-1-1 or None	-	7, 5-1-1 or None	-
Program Periods	4 or 2	-	4 or 2	-
Temp. Limits	✔	✔	✔	✔
Keypad Lockout	✔	✔	✔	✔
Dual Fuel (Logic Based)	✔	✔	✔	✔
Auto-change	✔	✔	✔	✔
Selectable Program	7, 5-1-1 or None	-	7, 5-1-1 or None	-

Matching 80 Series Thermostats to Your Application

Conventional Models are Single Stage Heat and Cool for Conventional Gas/Oil/Electric or Heat Pumps with no Aux Heat.
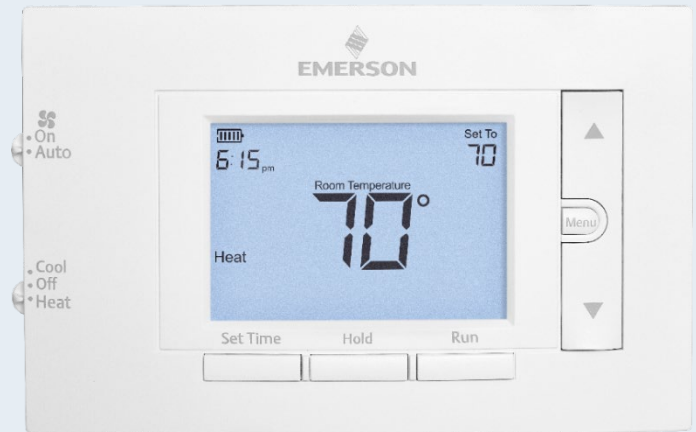
Programmable Models all have the same options of 7 independent day or 5+1+1 day programming, or can also be set to non-programmable configuration.

Selecting the right thermostat is easy. All you need to know is:

- Heat pump or traditional gas/oil/electric furnace and A/C?
- How many stages Heat/Cool?
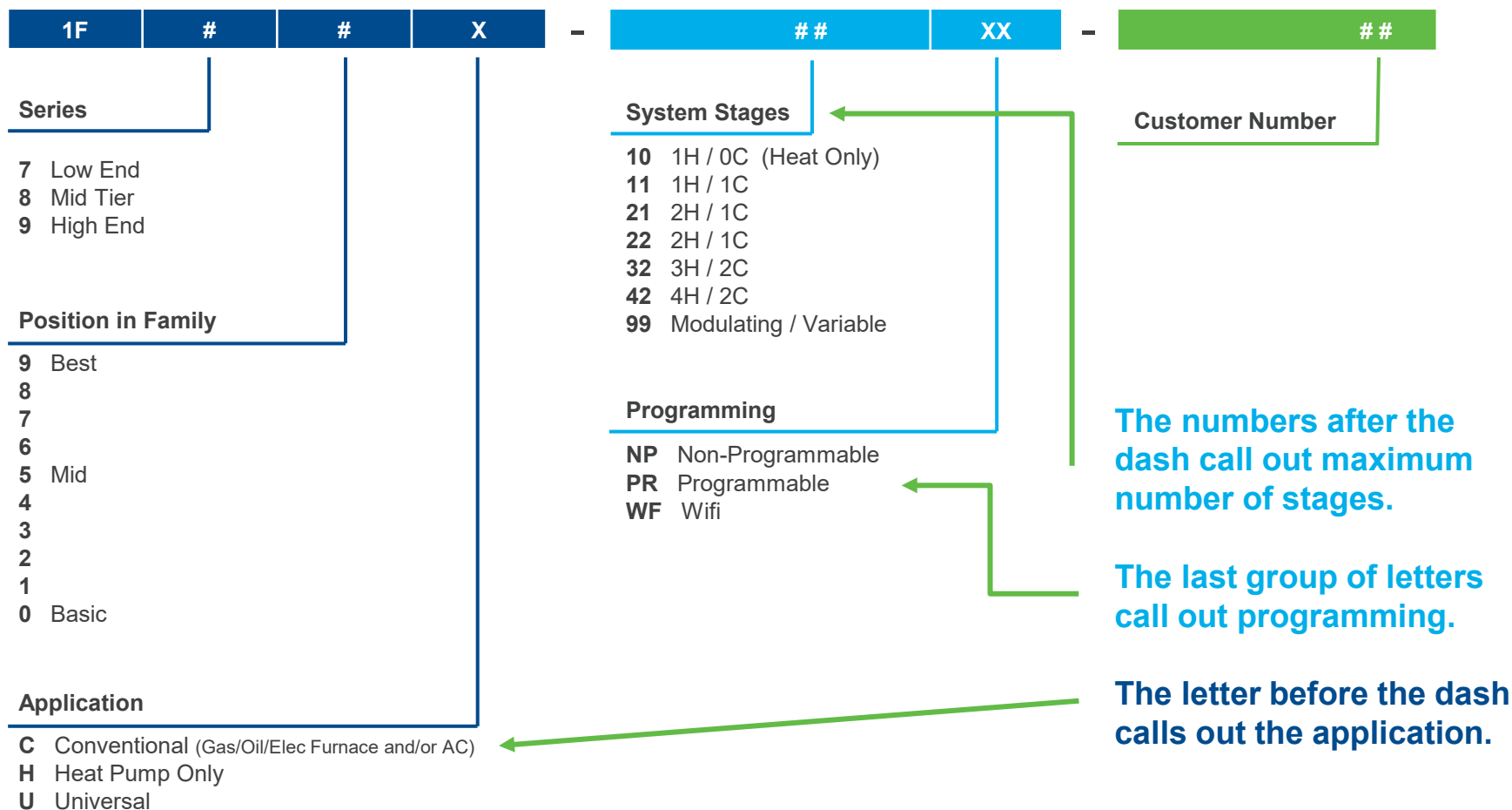- Programmable or Non-Programmable?
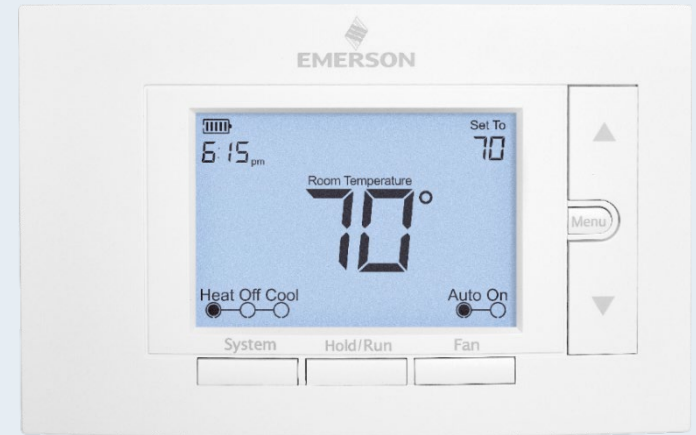
1F85U-42PR

1F83H-21PR

Smart Part Numbers Make it Easy to Select the Right Product

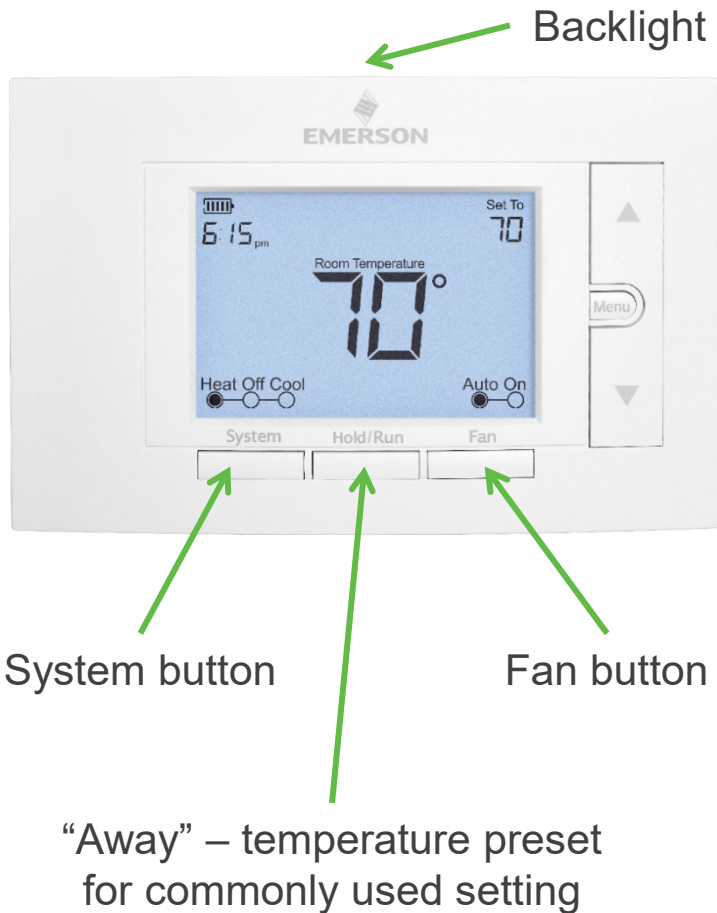## Example: **1F85U-42PR** Universal, 4H/2C Programmable

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.
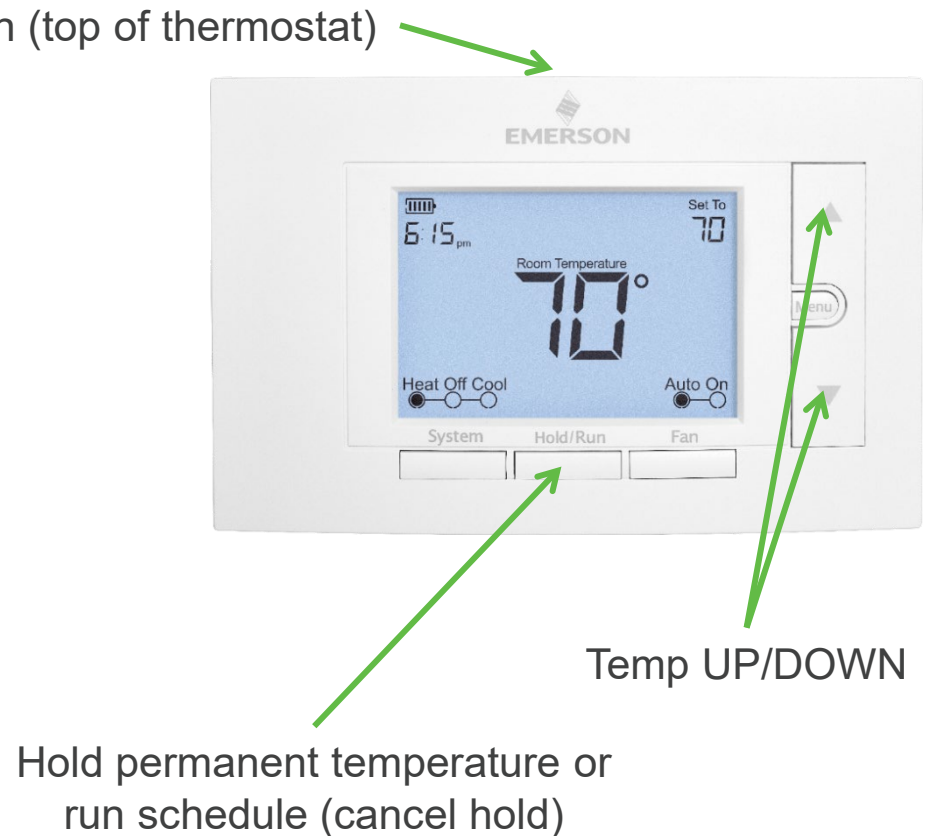
1F	#	#	X	-	##	XX	-	##

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.

Features - Universal Models

Non-Programmable
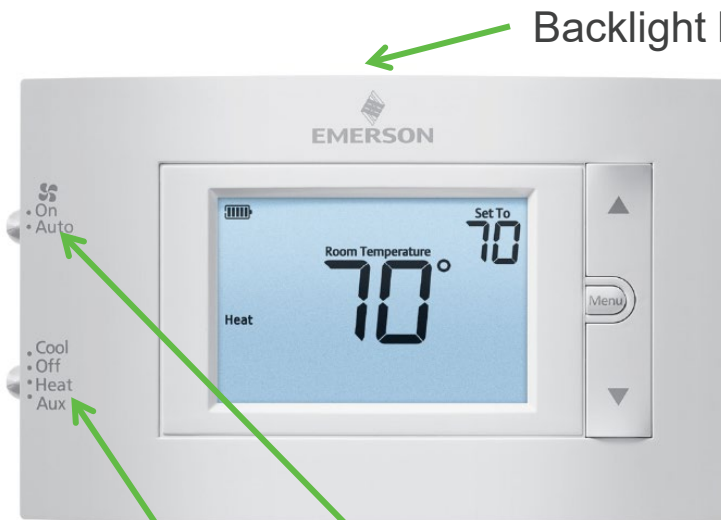*(1F85U-22NP / -42NP shown)*

Programmable
(1F85U-22PR / -42PR shown)

Backlight button (top of thermostat)

System button

Fan button

Temp UP/DOWN

"Away" – temperature preset for commonly used setting

Hold permanent temperature or run schedule (cancel hold)

Features - Heat Pump and Conventional Models

Non-Programmable
(1F83H-21NP shown)

Programmable
(1F83C-11PR shown)

Backlight button (top of thermostat)

Fan switch

System switch
("Aux Mode" for HP models only)
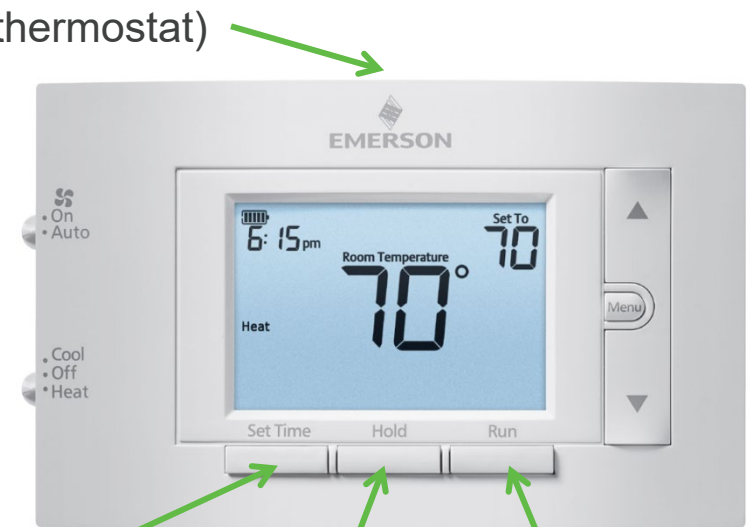
Adjust time and
day of week

Run schedule
(cancel perm. hold)

Permanent temperature hold

Consistent, Simple Installation and Wiring

1. Built in level indicator
2. Center hole wiring
3. Accessible terminal blocks
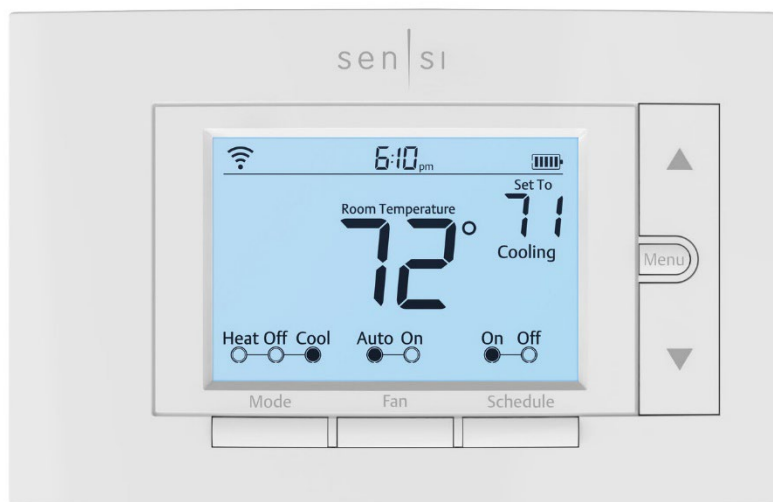
1F87U-42WF
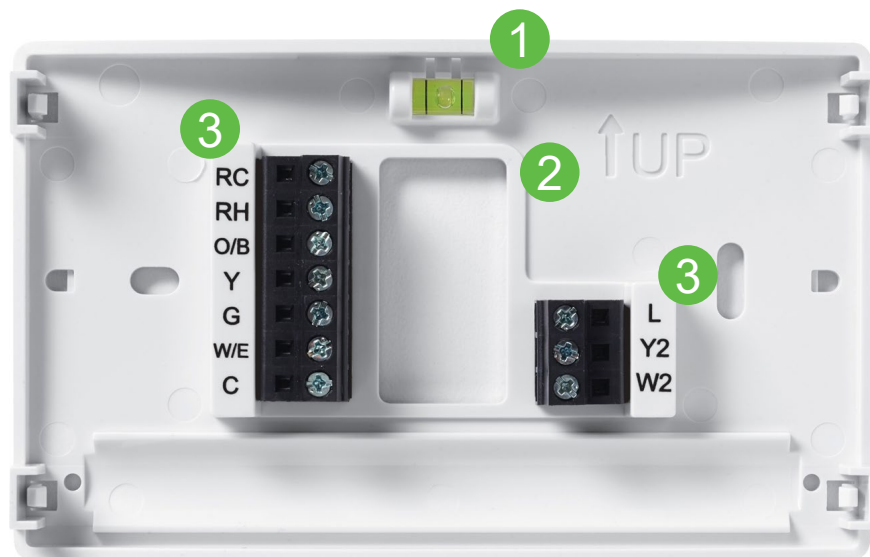
TECH TIP: Did you know that the 80 Series thermostats share the same subbase pin out as Sensi Wi-Fi 1F87U-42WF? Pull off any 80 Series stat, snap in a Sensi, and configure.

Application Switches and Jumpers

Conventional Models

- RC/RH Jumper Wire
- Gas/Elec Switch
- O/B Terminal Switch

Heat Pump Models

- W2/E Jumper
- O/B Terminal Switch

Universal Models

- RC/RH Jumper
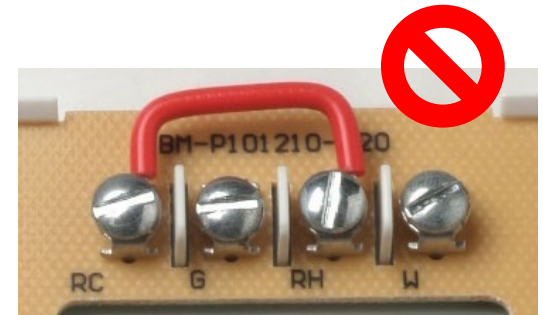
Application Switches

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 heat pumps or electric furnaces
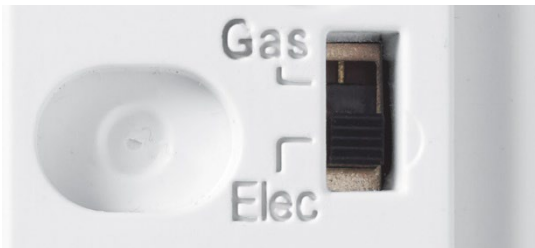
Heat Pump & Conventional Models
O / B Switch

This switch controls the position of the reversing valve

- **"O"** position – energizes RV in the cooling mode
- **"B"** position – energizes the RV in the heating mode

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

Application Selection Jumpers

Conventional & Universal Models

RC / RH Jumper

- **Single Transformer Systems → Don't Clip Jumper**
  - The thermostat electrically connects the RC (Hot Leg of the Cooling Transformer) and the RH (Hot Leg of the Heating Transformer) so a jumper is not required
- **Two Transformer Systems → Clip Jumper**
  - If there is a separate wire for RC and RH, clip the RC/RH jumper on the back of the thermostat.
  - This will isolate both terminals so they can be independently used.

Heat Pump Models

W2 / E Jumper

- **Combined Aux and Emergency Heat → Don't Clip Jumper**
  - The Heat Pump thermostat electrically connects W2 and E terminals so you do not need to install a jumper wire.
- **Independent Aux and Emergency Heat → Clip Jumper**
  - If there are separate W2 and E wires, clip the W2/E jumper located on the back of the thermostat.
  - Setting system switch to Aux results in auxiliary heating with no compressor operation.

For Two Transformer Systems, improper phasing will result in damage to the transformer.

Installer Menu – System Configuration

System Configuration Menus use the same numbers, same sequence for all models with an Installer Menu.

	Menu Name	Menu #	Conventional		Heat Pump		Universal			
			1F83C-11PR	1F83C-11NP	1F83H-21PR	1F83H-21NP	1F85U-22PR	1F85U-42NP	1F85U-22PR	1F85U-22NP
System Configuration	Outdoor Equipment	05						●		
	Indoor Equipment	10						●		
	Dedicated Emergency	15						●		
	O,B or 3 wire zone valve	20						●		
	Heat Cycle Rate	30	●		●			●		
	Aux/Emer cycle rate	32			●			●		
	Cool Cycle Rate	35	●		●			●		
	Compressor Lockout	50	●		●			●		
	Dual Fuel (Logic)	60			●		Enabled with outdoor / indoor equipment selection			
	Max. Heat Limit	65	●		●			●		
	Min. Heat Limit	66	●		●			●		

Installer Menu – User Settings

Menu Name	Menu #	Programmable				Non-Programmable			
		1F83C-11PR	1F83H-21PR	1F85U-22PR	1F85U-22PR	1F83C-11NP	1F83H-21NP	1F85U-42NP	1F85U-22NP
Programming	74	●		●					
Periods per Day	75	●		●					
Early Start (EMR)	76	●		●					
Fahrenheit or Celsius	79	●		●		●		●	
Temperature Offset	81	●		●		●		●	
Continuous Backlight*	83	●		●		●		●	
Change Filter	86	●		●		●		●	
Auto-Changeover	88			●				●	
Keypad Lockout	99	●		●		●		●	
Programming	74	●		●					
Periods per Day	75			●					

User Settings

*requires C-wire connection

Install

Introduction

The 80 Series provides the easiest selection, stocking, and installation in a space cluttered with too many models, features, and brands, with the features contractors and homeowners ask for, search for, and buy.

- **Large Display**
  - Bright backlight
  - High contrast

- **Selectable Programming**
  - Choice of 7 Day, 5+1+1 Day or Non-Programmable standard on all programmable models

- **Dual Fuel (HP/Gas Furnace) Control**
  - No sensor required
  - Standard on all staging models

- **Advanced Features**
  - Auto-Changeover on Universal models
  - Keypad Lockout
  - Temperature Limits

- **Easy to Install**
  - Built in level indicator
  - Simple set up menu
  - Terminal block connections

| Sensi WiFi | Universal | Heat Pump | Conventional |

Overview

80 Series Professional Thermostats

Application	U Universal		H Heat Pump	C Conventional
Model Number	1F85U-42PR	1F85U-42NP	1F85U-22PR	1F85U-22NP
Stages (H/C)	4H / 2C	4H / 2C	2H / 2C	2H / 2C
Selectable Program	7, 5-1-1 or None	-	7, 5-1-1 or None	-
Program Periods	4 or 2	-	4 or 2	-
Temp. Limits	✔	✔	✔	✔
Keypad Lockout	✔	✔	✔	✔
Dual Fuel (Logic Based)	✔	✔	✔	✔
Auto-change	✔	✔	✔	✔
Selectable Program	7, 5-1-1 or None	-	7, 5-1-1 or None	-

Instruction Sheets

1F85U-42PR

1F85U-42NP

1F85U-22PR

1F85U-22NP

Equipment Configuration Options

Thermostat Terminals with Attached Wires	Outdoor Equipment	Setting for Outdoor Equipment
No wire on thermostat terminal Y	No air conditioner/no heat pump	AC0
Y (no O/B)	Single stage air conditioner	AC1
Y, Y2 (no O/B)	Two stage air conditioner	AC2
Y, O/B	Singles stage heat pump	HP1
Y, Y2, O/B	Two stage heat pump	HP2

Thermostat Terminals with Attached Wires	Indoor Equipment	Setting for Indoor Equipment
No wire on thermostat terminal W/E	Blower only (no indoor heating equipment)	FAN
W/E (Gas or Oil Heat)	Single stage gas or oil furnace	GA1
W/E, W2 (Gas of Oil Heat	Two stage gas or oil furnace	GA2
W/E (Electric Heat)	Single stage electric furnace	EL1
W/E, W2 (Electric Heat)	Two stage electric furnace	EL2

Heat Pump Staging Applications

- **1F83C-11** Apply to Single Stage Compressor Heat Pumps with <u>No Auxiliary or Emergency Heat</u>.

  - Install a jumper between **Y** and **W** and select the proper reversing valve changeover position **O** or **B**

- **1F83H-21** or **1F85U-22** Apply to Single Stage Compressor Heat Pumps with one stage of Auxiliary or Emergency Heat.

- **1F85U-42** Apply to Single or Two Stage Compressor Heat Pumps with up to two stages of Auxiliary or Emergency Heat.

  - The -42 allows up to two Heat Pump and two Auxiliary / Emergency stages (four stages heat maximum). As received, -42 Universals sequence (stage) the back-up heating terminals **W/E** and **W2**.

  - There is also a menu option to use **W2** as a single stage of Auxiliary Heat and use **W/E** as a separate Auxiliary Heat Only (Emergency) stage. This would result in a 3 Heat/ 2 Cool thermostat.

Model Number (NP or PR)	HP Stages			Configure For Separate Aux-Emergency	HP Stages With Separate Aux/Emergency		
	Heat	Aux	Cool		Heat	Aux	Cool
1F83C-11	1	0	1	None	1	0	1
1F83H-21	1	1	1	Clip W2/E Jumper	1	1	1
1F85U-22	1	1	1	Use Configuration Menu Item #15	1	1	1
1F85U-42	2	2	2	Use Configuration Menu Item #15	2	1	2

Wiring

- Conventional
- Heat Pump
- Universal Configuration
- Hydronic 3 Wire Zone Valve Applications

EMERSON

Conventional Models - 1H/1C Wiring

- **Power**

  - For single transformer application, 1Heat / 1Cool
    - Remember RC and RH are internally have a jumper installed
  - For two Transformer applications, 1Heat/ 1Cool
    - Simply clip the RC/RH jumper on the back of the thermostat

- **Heat Pump, 1Heat/1Cool-No Auxiliary**

  - Put a field jumper between "Y" and "W"
  - Select the appropriate O/B switch setting on the back of the thermostat
    - "O", energizes reversing valve in cooling
    - "B", energizes reversing valve in heating

Conventional 1 Heat / 1Cool							
Furnace 1 Heat A/C 1 Cool	**RC**	**RH**	**O/B**	**G**	**Y**	**W**	**C**
	Power for Cooling	Power for Heating	Reversing Valve	Fan Relay	Cooling Relay	Heating Relay	Common wire for 24C
Heat Pump 1 Heat and 1 Cool	**RC**	**RH**	**O/B**	**G**	**Y**	**W**	**C**

Heat Pump Models - 2H/1C Wiring

- **Staging**

  – Heat Pump thermostats call 1st stage compressor with a 2nd stage of auxiliary

- **Auxiliary Selection**

  – Aux Heat as 2nd stage only with one wire to W2
  – Independent Auxiliary System Switch Selection (2 wires to W2 and E)
    - For separate W2 and E wires, clip the W2/E jumper located on the back of the thermostats.
    - Wire W2 & E separately so the compressor does not turn on when system switch is set to Aux

- **Dual Fuel is selected in the Installer's Menu, Item 60**

Heat Pump 2 Heat / 1 Cool								
	R	**O/B**	**G**	**Y**	**E**	**W2**	**C**	**L**
Heat Pump Staged								Heat Pump Malfunction/ Diagnostics Terminal (input signal requires common)
Heat Pump with Separate Aux or (Dual Fuel)	Power (24V)	Reversing Valve	Fan Relay	1st stage compressor	Emer. Heat Only	2nd Stage Heat (Aux)	Common wire for 24C	
	R	**O/B**	**G**	**Y**	**E**	**W2**	**C**	**L**

Universal Models - 2H/2C Wiring

- **Universal Applications (1F85U-22)**

  - Fossil Fuel, 2 Heat/2 Cool is a standard multi-stage gas and A/C system

  - Heat Pump, 2 Heat/2 Cool
    - The Universal -22 for Heat Pump in the heat mode is 1st stage compressor, second stage Aux.
      - For two stage heat pumps, use the -42 (4H/2C) model
    - Integrated RC/RH jumper on the back of the thermostat
    - Selectable O/B switch setting on the back of the thermostat
    - Dual Fuel is selected in the Installer's Menu, Item 60

Universal 2 Heat / 2 Cool										
Furnace 2 Stage A/C 2 Stage	RC	RH	O/B	G	Y	Y2	W/E	W2	C	L
	Power for Cooling	Power for Heating	Reversing Valve	Fan Relay	1st Stage Comp.	2nd Stage Comp.	1st Stage Heat Gas	2nd Stage Heat Gas	Common wire for 24C	Heat Pump Malfunction Diagnostics Terminal (input signal requires common)
Heat Pump w/ 1 stage Aux or (Dual Fuel)					1st Stage Comp.	No Call	2nd Stage Aux Heat and Emer Only	2nd Stage Heat Aux Stage		
	RC	RH	O/B	G	Y	Y2	W/E	W2	C	L

80 Series Universal -42 (4H/2C) Wiring

- **Universal Applications**

  - Heat Pump, 4 Heat/2 Cool
    - The Universal -42 for Heat Pump has 2 stages of compressor (Y1 & Y2) plus 2 stages of Auxiliary (W/E and W2)
    - Integrated RC/RH jumper on the back of the thermostat
    - Selectable O/B switch setting on the back of the thermostat
    - Dual Fuel is selected in the Installer's Menu, Item 60

> **NOTE: When using a separate stage of auxiliary as the emergency mode the thermostat will only have 3 stages of heat for normal operation.**

Universal 4 Heat / 2 Cool									
	RC	**RH**	**O/B**	**G**	**Y**	**Y2**	**W/E**	**W2**	**C**	**L**
2 Stage Furnace w/ 2 Stage A/C	**Power for Cooling**	**Power for Heating**	**Reversing Valve**	**Fan Relay**	**1st stage compressor**	**2nd stage compressor**	**1st Stage Heat Gas** / **Staged Aux Heat and Emer Only**	**2nd Stage Heat Gas** / **Staged Heat (Aux)**	**Common wire for 24C**	**Heat Pump Malfunction Diagnostics Terminal (input signal requires common)**
2 Stage Heat Pump with w/ 2 Stage Aux or (Dual Fuel)	**RC**	**RH**	**O/B**	**G**	**Y**	**Y2**	**W/E**	**W2**	**C**	**L**

Universal Models: Hydronic Wiring

- **Hydronic Applications 3 Wire Zone Valves**

  - W/E terminal opens the hydronic valve identified as 4 on the valve

  - O/B terminal closes the hydronic valve identified as 6 on the valve

  - RH terminal is the hot side of the 24 VAC identified as 5 on the valve
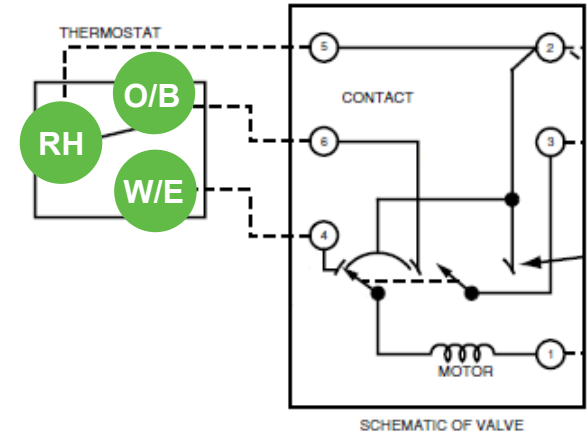
- **In Configuration Menu Option 20-reversing valve selection-there is an option 3 for 3-wire zone valve configuration**

TECH TIP: This configuration is designated by #6 terminal on other thermostats.

Universal 2 Heat / 2 Cool										
	RC	RH	O/B	G	Y	Y2	W/E	W2	C	L
Furnace 2 Stage A/C 2 Stage	Power for Cooling	Power for Heating	Reversing Valve	Fan Relay	1st stage comp.	2nd stage comp.	1st Stage Heat Gas	2nd Stage Heat Gas	Common wire for 24C	Heat Pump Malfunction Diagnostics Terminal (input signal requires common)
Heat Pump w/ 2 stages Aux or (Dual Fuel)							1st Stage Heat (Aux)	2nd Stage Heat (Aux)		
	RC	RH	O/B	G	Y	Y2	W/E	W2	C	L

Installer Configuration Menu

Accessing the Installer & User Menus

Installer Menu → Press and Hold Menu for 8 seconds

- System application / configuration menus
  - These setting directly impact the operation of the equipment.
  - Set options to match the system.
- User Menu
  - Access homeowner settings, same menu sequence

Press and Hold:
To Access Installer Menu
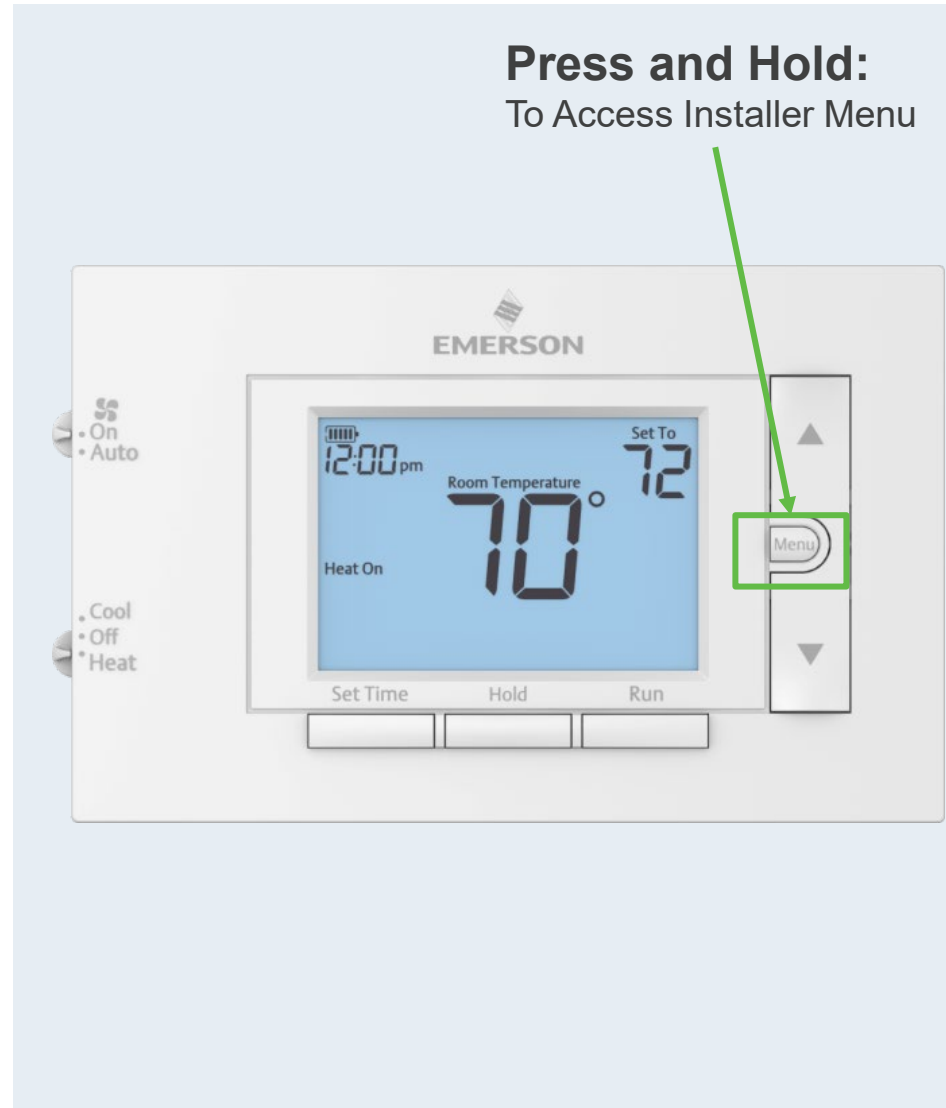
Navigating & Making Changes

- Press **NEXT/BACK** to navigate through menus
- Press **UP/DOWN** buttons to rotate thru options
- Press **NEXT** or **EXIT** to save changes

Use temperature **UP/DOWN** buttons to rotate through options

Use to navigate through Menu items

Display Options for each menu

Display Menu Name and Number

Installer Menu – System Configuration

System Configuration Menus use the same numbers, same sequence for all models with an Installer Menu.

System Configuration	Menu Name	Menu #	Conventional		Heat Pump		Universal			
			1F83C-11PR	1F83C-11NP	1F83H-21PR	1F83H-21NP	1F85U-22PR	1F85U-42NP	1F85U-22PR	1F85U-22NP
	Outdoor Equipment	05						●		
	Indoor Equipment	10						●		
	Dedicated Emergency	15						●		
	O,B or 3 wire zone valve	20						●		
	Heat Cycle Rate	30	●		●			●		
	Aux/Emer cycle rate	32			●			●		
	Cool Cycle Rate	35	●		●			●		
	Compressor Lockout	50	●		●			●		
	Dual Fuel (Logic)	60			●		Enabled with outdoor / indoor equipment selection			
	Max. Heat Limit	65	●		●			●		
	Min. Heat Limit	66	●		●			●		

Installer Menu – User Settings

	Menu Name	Menu #	Programmable				Non-Programmable			
			1F83C-11PR	1F83H-21PR	1F85U-22PR	1F85U-22PR	1F83C-11NP	1F83H-21NP	1F85U-42NP	1F85U-22NP
User Settings	Programming	74	●		●					
	Periods per Day	75	●		●					
	Early Start (EMR)	76	●		●					
	Fahrenheit or Celsius	79	●		●			●		●
	Temperature Offset	81	●		●			●		●
	Continuous Backlight*	83	●		●			●		●
	Change Filter	86	●		●			●		●
	Auto-Changeover	88			●					●
	Keypad Lockout	99	●		●			●		●
	Programming	74	●		●					
	Periods per Day	75			●					

*requires C-wire connection

Homeowner/User Menu

- Setting Time and Day
- Setting Schedules
- Homeowner/User Menu

EMERSON.

Accessing the Homeowner/User Menu

Going the extra mile

• Press the **MENU** button from the home screen. Use the **UP** or **DOWN** buttons to highlight settings and press **NEXT**. Use **NEXT** and **BACK** to navigate through menu items. Press **UP** or **DOWN** to change the setting.

Menu	Description	Setting	Options
01	Schedule Type, 7, 5+1+1, 0	5	7- 7 Day 5- 5+1+1 0-Non-Programmable
02	Defines Periods per Day	4	2- Leave, Return 4- Wake, Leave, Return , Sleep
03 ES	Early Start: starts heating or cooling early so the set temperature is reached by the programmed time	Off	On- start early Off- start at program period time
04	Fahrenheit or Celsius	F	F- Fahrenheit C- Celsius
05	Temperature Display Adjustment: adjusts the Room Temperature	0	-5 to +5
06 bL	Continuous display backlight: keep the backlight always on – "C" wire required	Off	On-always on Off- momentary
07	Change Air Filter: set up a monthly reminder	Off	1 to 12-reminder time in months Off- No filter reminder
08	Auto-Changeover: thermostat automatically switches between heat and cool	Off	On- enable auto Off- disable auto
09	Keypad Lockout: prevent unwanted changes to the thermostat	Off	On- disable buttons Off- all buttons are active Press ▲ and MENU for 3 seconds to turn Keypad Lockout off!

Setting Time and Day

Programmable (PR) Models Only

1. Press *MENU*

2. The *TIME* icon will be flashing
    a. Press *UP/DOWN* to cycle thru menu options

3. Press *NEXT* to set the time
    a. Press either the *UP/DOWN* button until you reach the correct hour and the AM/PM designation
    b. Press **NEXT** to switch from hours to minutes
    c. Press and hold either the *UP/DOWN* button until you reach the correct minutes

4. Press *RUN* to exit
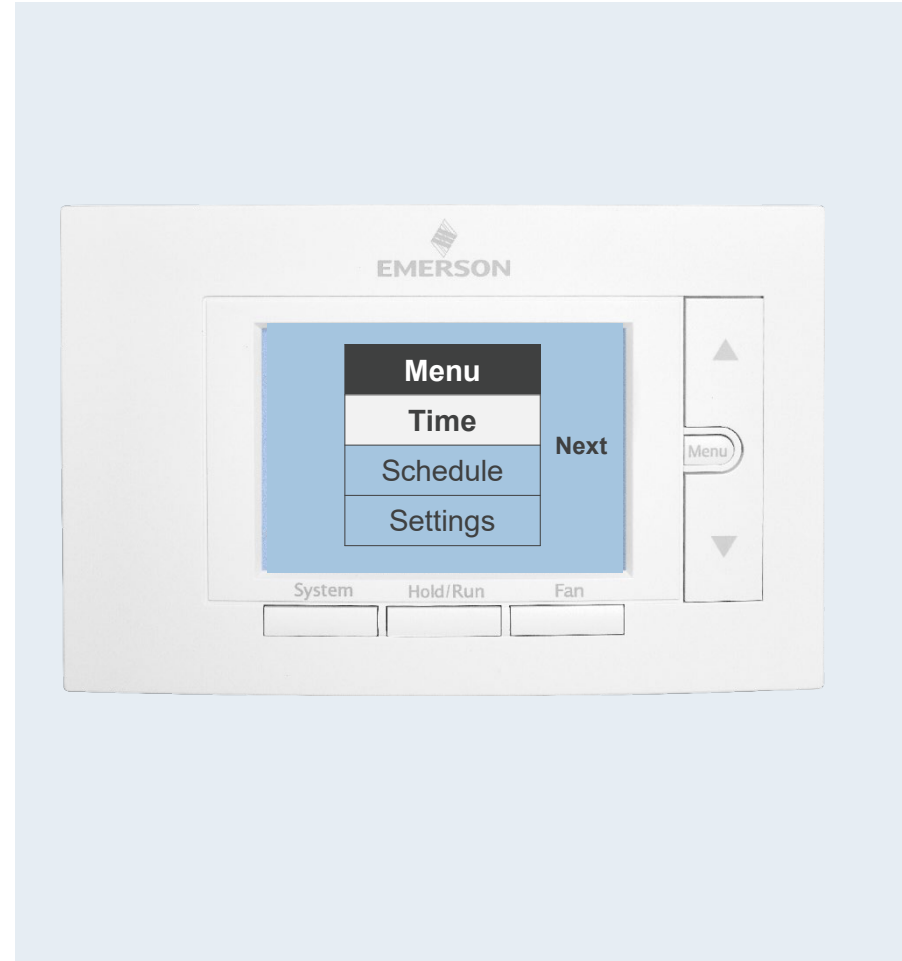
Setting the Schedule

Programmable (PR) Models Only

1. Use the *SYSTEM* button to select *Heat or Cool* to set the corresponding schedule

2. Press *MENU*

3. The *TIME* option will be flashing
   a. Press *UP/DOWN* to cycle thru menu options
   b. Select *SCHEDULE*

4. Press *NEXT* to set the schedule

5. The *TIME* icon will be flashing
   a. Use *UP/DOWN* set the time for the start of a period for the days selected
      • **NOTE:** To change program options, go to the *SETTINGS* menu
   b. Press *NEXT* to set the temperature for that period using *UP/DOWN* buttons

6. Continue to press *NEXT* to advance through all periods for all days of the week.
   a. Press *BACK* to return to the previous setting.

7. Once all days of the week have been programmed the thermostat will display *END*
   a. Press *EXIT* at any time to save changes and return to home screen

Display guides you through the program
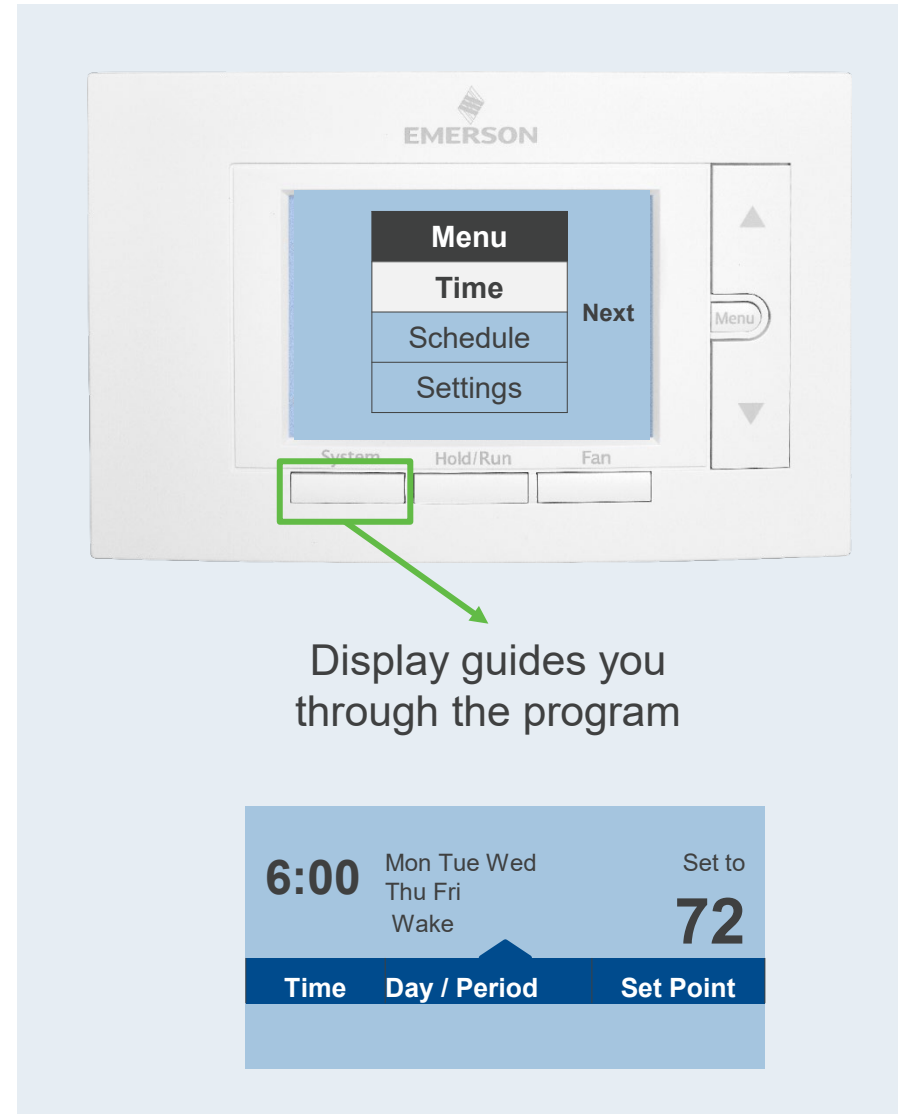
Troubleshooting

Symptom	Possible Cause	Corrective Action
No Heat/ No Cool/ No Fan (common problem)	1.) Blown fuse or tripped circuit 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 Connection
No Heat	1.) System not set to Heat 2.) Loose connection to thermostat or system 3.) Heating System requires service or thermostat requires replacement	1.) Set thermostat to Heat. 2.) Verify thermostat and system wires are securely attached. 3.) Diagnostic. Set System 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 clicks, contact the furnace manufacturer or a service person to very the heating system is operating correctly.
No Cool	1.) System not set to Cool 2.) Loose connection to the thermostat or system 3.) Cooling System requires service or thermostat requires replacement	1.) Set thermostat to Cool. 2.) Verify thermostat and system wires are securely attached. 3.) Diagnostic. Set System 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 five 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).
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. Try resetting the thermostat. If the condition persists contact your HVAC service person.

Troubleshooting Continued

Symptom	Possible Cause	Corrective Action
Thermostat Display & Thermometer Disagree	Thermostat display requires adjustment.	Display can be adjusted +/-5 degrees. See User Menu item 05.
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, 32, & 35). If an acceptable cycle rate is not achieved, contact your HVAC service person. Cycle rate is dependent on system sizing. Undersized or oversized systems may cycle faster or slower than optimal and require additional heating or cooling capacity or duct balancing to achieve an optimal cycle rate for comfort.
"Call for Service" icon appears on display	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 with the outdoor unit.	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. 5.) Contact a service person to verify the outdoor equipment is operating correctly.

Resetting the Thermostat or Thermostat Settings
If the thermostat has good batteries, but has a blank display or does not respond to key presses, the thermostat should be reset by removing the batteries for 2 minutes. This reset will not change the menu settings or program. If the condition persists after reinstalling the batteries, replace the thermostat.

To conveniently reset only the schedule and user settings back to factory defaults, press **MENU** and **BACKLIGHT** buttons at the same time and hold until the display goes blank and resets.

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