

## Application Note 2021: Explanation of Defrost Cycles

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Reference Documents  
Technical Service Manual – R2-Series  
Technical Service Manual – Hyper-heating R2-Series  
Technical Service Manual – Y-Series  
Technical Service Manual – Hyper-heating Y-Series

## Table of Contents

Introduction.....	3
SECTION 1: Y-Series Heat Pumps, PUHY models .....	3
SECTION 1A: Y-Series Heat Pumps .....	3
SECTION 1B: Hyper-Heating Y-Series Heat Pumps.....	5
SECTION 2: R2-Series Heat Recovery, PURY models.....	7
SECTION 2A: Standard R2-Series.....	7
SECTION 2B: Hyper-Heating R2-Series, Standard Defrost.....	9
SECTION 2C: Hyper-Heating R2-Series, ON-Defrost.....	11

## Introduction

This Application Note provides an overview related to the defrost process for CITY MULTI® Y-Series, R2-Series and S-Series equipment.

## SECTION 1: Y-Series Heat Pumps, PUHY models

### SECTION 1A: Y-Series Heat Pumps

**Table 1** Y-Series Applicable Outdoor Unit Models

PUHY-P72TKMU-A	PUHY-P72YKMU-A	PUHY-P96TKMU-A	PUHY-P96YKMU-A
PUHY-P120TKMU-A	PUHY-P120YKMU-A	PUHY-P144TKMU-A	PUHY-P144YKMU-A
PUHY-P144YSKMU-A	PUHY-P168TSKMU-A	PUHY-P168YSKMU-A	PUHY-P192TSKMU-A
PUHY-P192YSKMU-A	PUHY-P216TSKMU-A	PUHY-P216YSKMU-A	PUHY-P240TSKMU-A
PUHY-P240YSKMU-A	PUHY-P264TSKMU-A	PUHY-P264YSKMU-A	PUHY-P288TSKMU-A
PUHY-P288YSKMU-A	PUHY-P312TSKMU-A	PUHY-P312YSKMU-A	PUHY-P336TSKMU-A
PUHY-P336YSKMU-A	PUHY-P360TSKMU-A	PUHY-P360YSKMU-A	

1. **Defrost Initiation.** To determine when a defrost cycle needs to be initiated, the CITY MULTI system looks at three variables:
  - a. Outside Ambient Air Temperature
  - b. Cumulative Compressor Operating Time and
  - c. Outdoor Pipe Temperature

Considering the above variables, the defrost cycle will start when all of the three conditions (outside temperature, cumulative compressor operation time, and pipe temperature) under “Condition 1”, “Condition 2” or “Condition 3” are met.

**Table 2** Y-Series Applicable Outdoor Unit Models

	CONDITION 1	CONDITION 2	CONDITION 3
<b>Outside Air Temp (TH7)</b>	23 F or above	23 F or below	
<b>Cummulative Compressor Operating Time</b>	50 minutes or more Cummulative Compressor Operating Time (can be increased to 90 minutes if desired)		250 minutes or more
<b>Outdoor Unit Pipe Temp</b>	The outdoor unit pipe temperature (TH3 for PUHY) has stayed below the temperature shown in the table below for at least three minutes	Outdoor unit pipe temperature has stayed LESS THAN outdoor temperature (TH7) minus 23 F for at least three minutes - OR - If the actual Low Side Pressure (63LS shown as PSI) has stayed below the value obtained from the following formula for at least three minutes: "0.158(4 + TH7 F) + 21.3"	The outdoor unit pipe temperature (TH3 for PUHY) has stayed below the temperature shown in the table below for at least three minutes

**Table 3** Y-Series Applicable Outdoor Unit Models

	72,000 BTU/hr	96,000 BTU/hr	120,000 BTU/Hr	144,000 BTU/hr
SW4 (915) OFF position	14 <sup>o</sup> F	17.6 <sup>o</sup> F	17.6 <sup>o</sup> F	17.6 <sup>o</sup> F
SW4 (915) ON position	23 <sup>o</sup> F	23 <sup>o</sup> F	23 <sup>o</sup> F	23 <sup>o</sup> F

**2. During Defrost:**

- a. The reversing valve will be de-energized.
- b. The indoor fan motor will stop to prevent cold air from being distributed into the conditioned space.
  - i. *NOTE: For ducted indoor units that have had external heat coils added (such as an electric duct heater or a hot water coil) the indoor fan could be set to run continuously during defrost. By allowing the indoor fan to run during defrost, heat can be provided to the conditioned space during the defrost cycle. For current K-Generation ducted indoor units this can be accomplished by removing jumper CN22/CN4Y on the indoor unit Fan Control Board. CN24 can be used to provide power to an external relay that operates the external heater. For convenience you can order Mitsubishi's relay kit using part number "CN24-Relay-Kit-CM3."*
- c. The outdoor fan will stop. This allows the outdoor coil to increase temperature more efficiently to eliminate frost on the outdoor coil as quickly as possible.
- d. Compressor frequency operates at a high speed to increase discharge gas temperature.
- e. Under certain outdoor ambient conditions some steam may be visible at the outdoor unit as frost is eliminated, this is not unusual.

**3. Defrost Termination.** Defrost may be terminated by one of two conditions, as follows:

- a. Maximum defrost time expires; this is 10 to 12 minutes (depending upon model) from the start of the defrost cycle or,
- b. When the outdoor pipe temperature has reached or exceeded the value shown in the chart below for at least four minutes.

**Table 4** Y-Series Heat Pump

UNIT CAPACITY	Y Series Heat Pump	
	TH3 Outdoor Pipe Temp	
	SW4 (916) OFF	SW4 (916) ON
72,000 BTU/hr	50 <sup>o</sup> F	41 <sup>o</sup> F
96,000 BTU/hr	45 <sup>o</sup> F	41 <sup>o</sup> F
120,000 BTU/hr	50 <sup>o</sup> F	41 <sup>o</sup> F
144,000 BTU/hr	50 <sup>o</sup> F	41 <sup>o</sup> F

**NOTES AND GENERAL INFORMATION**

- For Y-Series equipment some refrigerant will flow to the indoor coil even though and the indoor fan will be off to prevent cold air from being distributed.
- When multiple outdoor units are twinned or tripled to create a single refrigerant system (such as a PUHY-P288 consisting of two individual PUHY-P144's piped to each other); if one module calls for defrost both units will go in to defrost at the same time.
- When there are multiple CITY MULTI outdoor refrigerant systems connected on the same M Net control bus, if one refrigerant system is already in defrost another refrigerant system cannot enter

defrost until the first has completed its cycle. This prevents the conditioned space from excessive drops in temperature.

- A defrost cycle can be forced if at least 10 minutes have passed since the last defrost has ended. To force a defrost cycle set DIP Switch SW4 (913) to the ON position.
- Once defrost is started it will continue even if indoor units stop or if room temperature is satisfied.
- If an error/problem is detected during the defrost operation, the operation will be stopped and the defrost prohibition time based on the accumulated compressor operation time will be set to 20 minutes.
- Even if the defrost-prohibit timer is set to 90 minutes, the actual defrost-prohibit time for the next defrost cycle is 50 minutes if the last defrost cycle took 12 minutes.
- Outdoor coil frosting will impact the heating/defrosting cycle most commonly when the outdoor ambient temperature ranges from 26° F to 36° F. At colder outdoor temperatures frost accumulation is less. Product service manuals contain charts showing expected degradation.
- Outdoor units should be elevated above typical snowfall levels to improve draining of the outdoor coil during defrost and to reduce snow accumulation on the coil.

## SECTION 1B: Hyper-Heating Y-Series Heat Pumps

**Table 5** Y-Series H2i Hyper-Heating Applicable Outdoor Unit Models

PUHY-HP72TJMU-A	PUHY-HP96TJMU-A	PUHY-HP144TSJMU-A	PUHY-HP192TSJMU-A
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1. **Defrost Initiation.** To determine when a defrost cycle needs to be initiated, the CITY MULTI system looks at three variables:
  - a. Outside Ambient Air Temperature
  - b. Cumulative Compressor Operating Time and
  - c. Outdoor Pipe Temperature

Considering the above variables, the defrost cycle will start when all of the three conditions (outside temperature, cumulative compressor operation time, and pipe temperature) under “Condition 1”, “Condition 2” or “Condition 3” are met.

**Table 6** DEFROST INITIATION - PUHY-HP H2i Hyper-Heating MODELS (Y-Series)

	CONDITION 1	CONDITION 2	CONDITION 3
<b>Outside Air Temp (TH7)</b>	23 F or above	23 F or below	
<b>Cummulative Compressor Operating Time</b>	50 minutes or more Cummulative Compressor Operating Time (can be increased to 90 minutes if desired)		250 minutes or more
<b>Outdoor Unit Pipe Temp (TH3)</b>	The outdoor unit pipe temperature (TH3 for PUHY) has stayed below 14 F for at least three minutes, - OR - If the actual Low Side Pressure (63LS shown as PSI) has stayed below the value obtained from the following formula for at least three minutes: "0.158(4 + TH7 F) + 21.3"	Outdoor unit pipe temperature has stayed LESS THAN outdoor temperature (TH7) minus 23 F for at least three minutes - OR - If the actual Low Side Pressure (63LS shown as PSI) has stayed below the value obtained from the following formula for at least three minutes: "0.158(4 + TH7 F) + 21.3"	The outdoor unit pipe temperature (TH3 for PUHY) has stayed at or below 14 F for at least three minutes

## 2. During Defrost:

- a. The reversing valve will be de-energized.
- b. The indoor fan motor will stop to prevent cold air from being distributed into the conditioned space.
  - i. *NOTE: For ducted indoor units that have had external heat coils added (such as an electric duct heater or a hot water coil) the indoor fan could be set to run continuously during defrost. By allowing the indoor fan to run during defrost, heat can be provided to the conditioned space during the defrost cycle. For current K-Generation ducted indoor units this can be accomplished by removing jumper CN22/CN4Y on the indoor unit Fan Control Board. CN24 can be used to provide power to an external relay that operates the external heater. For convenience you can order Mitsubishi's relay kit using part number "CN24-Relay-Kit-CM3."*
- c. The outdoor fan will stop. This allows the outdoor coil to increase temperature more efficiently to eliminate frost on the outdoor coil as quickly as possible.
- d. Compressor frequency operates at a high speed to increase discharge gas temperature.
- e. Under certain outdoor ambient conditions some steam may be visible at the outdoor unit as frost is eliminated, this is not unusual.

## 3. Defrost Termination. Defrost may be terminated by one of two conditions, as follows:

- a. Maximum defrost time expires; this is 12 minutes from the start of the defrost cycle or,
- b. When the outdoor pipe temperature (TH3) has reached or exceeded 50° F for at least two minutes.

### NOTES AND GENERAL INFORMATION

- For Y-Series Hyper-Heating H2i equipment some refrigerant will flow to the indoor coil even though and the indoor fan will be off to prevent cold air from being distributed.
- When multiple outdoor units are twinned or tripled to create a single refrigerant system (such as a PUHY-HP144 consisting of two individual PUHY-HP72's piped to each other); if one module calls for defrost both units will go in to defrost at the same time.
- When there are multiple CITY MULTI outdoor refrigerant systems connected on the same M Net control bus, if one refrigerant system is already in defrost another refrigerant system cannot enter defrost until the first has completed its cycle. This prevents the conditioned space from excessive drops in temperature.
- A defrost cycle can be forced if at least 10 minutes have passed since the last defrost has ended. To force a defrost cycle set DIP Switch SW2-7 to the ON position.
- Even if the defrost-prohibit timer is set to 90 minutes, the actual defrost-prohibit time for the next defrost cycle is 50 minutes if the last defrost cycle took 12 minutes.
- If an error/problem is detected during the defrost cycle the operation will stop and the defrost prohibition time based on compressor operation time will be set to 20 minutes.
- Once defrost is started it will continue even if there is an error/problem during defrost or if the room temperature is satisfied.
- Outdoor coil frosting will impact the heating/defrosting cycle most commonly when the outdoor ambient temperature ranges from 26° F to 36° F. At colder outdoor temperatures frost accumulation is less. Product service manuals contain charts showing expected degradation.
- Outdoor units should be elevated above typical snowfall levels to improve draining of the outdoor coil during defrost and to reduce snow accumulation on the coil.

## SECTION 2: R2-Series Heat Recovery, PURY models

### SECTION 2A: Standard R2-Series

**Table 7** R2-Series Applicable Outdoor Unit Models

PURY-P72TKMU-A	PURY-P72YKMU-A	PURY-P96TKMU-A	PURY-P96YKMU-A
PURY-P120TKMU-A	PURY-P120YKMU-A	PURY-P144TKMU-A	PURY-P144YKMU-A
PURY-P144YSKMU-A	PURY-P168TSKMU-A	PURY-P168YSKMU-A	PURY-P192TSKMU-A
PURY-P192YSKMU-A	PURY-P216TSKMU-A	PURY-P216YSKMU-A	PURY-P240TSKMU-A
PURY-P240YSKMU-A	PURY-P264TSKMU-A	PURY-P264YSKMU-A	PURY-P288TSKMU-A
PURY-P288YSKMU-A			

1. **Defrost Initiation.** To determine when a defrost cycle needs to be initiated, the CITY MULTI system looks at three variables:
  - a. Outside Ambient Air Temperature
  - b. Cumulative Compressor Operating Time
  - c. Outdoor Pipe Temperature

Considering the above variables, the defrost cycle will start when all of the three conditions (outside temperature, cumulative compressor operation time, and pipe temperature) under “Condition 1”, “Condition 2” or “Condition 3” are met.

**Table 8** DEFROST INITIATION - PURY MODELS (R2-Series)

	CONDITION 1	CONDITION 2	CONDITION 3
<b>Outside Air Temp (TH7)</b>	23 F or above	23 F or below	
<b>Cummulative Compressor Operating Time</b>	50 minutes or more Cummulative Compressor Operating Time (can be increased to 90 minutes if desired)		250 minutes or more
<b>Outdoor Unit Pipe Temp (TH6)</b>	The outdoor unit pipe temperature (TH6 for PURY) has stayed below the temperature shown in the table below for at least three minutes	Outdoor unit pipe temperature (TH6) has stayed LESS THAN outdoor temperature (TH7) minus 23 F for at least three minutes - OR - If the actual Low Side Pressure (63LS shown as PSI) has stayed below the value obtained from the following formula for at least three minutes: "0.158(4 + TH7 F) + 21.3"	The outdoor unit pipe temperature (TH6 for PURY) has stayed below the temperature shown in the table below for at least three minutes

**Table 9** Outdoor Pipe Temperature (TH6 for PURY)

	72,000 BTU/hr	96,000 BTU/hr	120,000 BTU/Hr	144,000 BTU/hr
SW4 (915) OFF position	14 <sup>0</sup> F	14 <sup>0</sup> F	17.6 <sup>0</sup> F	17.6 <sup>0</sup> F
SW4 (915) ON position	23 <sup>0</sup> F	23 <sup>0</sup> F	23 <sup>0</sup> F	23 <sup>0</sup> F

2. **During Defrost:**
  - a. The reversing valve will be de-energized.
  - b. The indoor fan motor will stop to prevent cold air from being distributed into the conditioned space.
    - i. *NOTE: For ducted indoor units that have had external heat coils added (such as an electric duct heater or a hot water coil) the indoor fan could be set to run continuously during defrost. By allowing the indoor fan to run during defrost, heat can be provided to the conditioned space during defrost. For current K-Generation ducted indoor units this can be accomplished by removing jumper*

CN22/CN4Y on the indoor unit Fan Control Board. CN24 can be used to provide power to an external relay that operates the external heater. For convenience you can order Mitsubishi's relay kit using part number "CN24-Relay-Kit-CM3."

- c. The outdoor fan will stop, allowing the outdoor coil to increase temperature to eliminate frost more efficiently.
  - d. Compressor frequency will run at a high speed to increase discharge gas temperature.
  - e. Under certain outdoor ambient conditions some steam may be visible at the outdoor unit as frost is eliminated, this is not unusual.
3. **Defrost Termination.** Defrost may be terminated by one of two conditions, as follows:
- a. Maximum defrost time cycle has expired. This is 12 minutes from the start of the defrost cycle or,
  - b. When the outdoor pipe temperatures of TH3 and TH6 have reached or exceeded the value shown in the below chart for at least four minutes if SW4 (916) is set to the OFF position or for at least 2 minutes if SW4 (916) is set to the ON position.

**Table 10** R2-Series Heat Recovery

UNIT CAPACITY	R2 Series Heat Recovery	
	TH3 and TH6 Pipe Temp	
	SW4 (916) OFF	SW4 (916) ON
72,000 BTU/hr	45° F	54° F
96,000 BTU/hr	45° F	54° F
120,000 BTU/hr	45° F	54° F
144,000 BTU/hr	45° F	54° F

NOTES AND GENERAL INFORMATION

- On R2-Series equipment the BC controller stops refrigerant flow to the indoor coil
- When multiple outdoor units are twinned or tripled to create a single refrigerant system (such as a PURY-P288 consisting of two individual PURY-P144's piped to each other); if one module calls for defrost both units will go in to defrost at the same time.
- When there are multiple CITY MULTI outdoor refrigerant systems connected on the same M Net control bus, if one refrigerant system is already in defrost another refrigerant system cannot enter defrost until the first has completed its cycle. This prevents the conditioned space from excessive drops in temperature.
- A defrost cycle can be forced if at least 10 minutes have passed since the last defrost has ended. To force a defrost cycle set DIP Switch SW4 (913) to the ON position.
- Defrost operation will continue even if the indoor units stop or set temperature is satisfied.
- Even if the defrost prohibition timer is set to 90 minutes (or 150 minutes), the actual defrost prohibit time for the next defrost will be set to 50 minutes if the previous defrost cycle took 12 minutes.
- If an error/problem occurs during a defrost cycle, the operation will be stopped and the defrost prohibit time based upon compressor operating time will be set to 20 minutes.
- Outdoor coil frosting will impact the heating/defrosting cycle most commonly when the outdoor ambient temperature ranges from 26° F to 36° F. During this outdoor temperature range, defrost cycling may reduce overall heating capacity up to 15%. At colder outdoor temperatures frost



# APPLICATION NOTES

accumulation is less, defrost cycles are shorter and overall heating capacity is typically within 5% of rated capacity. Product service manuals contain charts showing expected degradation.

- Outdoor units should be elevated above typical snowfall levels to improve draining of the outdoor coil during defrost and to reduce snow accumulation on the coil.

## SECTION 2B: Hyper-Heating R2-Series, Standard Defrost

**Table 11** H2i Hyper-Heating R2-Series Applicable Outdoor Unit Models

PURY-HP72TKMU-A-H	PURY-HP72YKMU-A	PURY-HP96TKMU-A-H	PURY-HP96YKMU-A
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1. **Defrost Initiation.** To determine when a defrost cycle needs to be initiated, the CITY MULTI system looks at three variables:
  - a. Outside Ambient Air Temperature
  - b. Cumulative Compressor Operating Time
  - c. Outdoor Pipe Temperature

Considering the above variables, the defrost cycle will start when all of the three conditions (outside temperature, cumulative compressor operation time, and pipe temperature) under “Condition 1”, “Condition 2” or “Condition 3” are met.

**Table 12** DEFROST INITIATION - PURY-HP MODELS (H2i Hyper-Heat R2-Series)

	CONDITION 1	CONDITION 2	CONDITION 3
<b>Outside Air Temp (TH7)</b>	23 F or above	23 F or below	
<b>Cummulative Compressor Operating Time</b>	50 minutes or more Cummulative Compressor Operating Time (can be increased to 90 minutes if desired)		250 minutes or more
<b>Outdoor Unit Pipe Temp (TH6)</b>	The outdoor unit pipe temperature has stayed below the temperature shown in the table below for at least three minutes	Outdoor unit pipe temperature has stayed LESS THAN outdoor temperature (TH7) minus 23 F for at least three minutes - OR - If the actual Low Side Pressure (63LS shown as PSI) has stayed below the value obtained from the following formula for at least three minutes: "0.158(4 + TH7 F) + 21.3"	The outdoor unit pipe temperature has stayed below the temperature shown in the table below for at least three minutes

**Table 13** Outdoor Pipe Temperature (TH6 for PURY-HP)

	72,000 BTU/hr	96,000 BTU/hr
SW4 (915) OFF position	14°F	18°F
SW4 (915) ON position	23°F	23°F

## 2. During Defrost Operation:

- a. The reversing valve will be de-energized.
- b. The indoor fan motor will stop to prevent cold air from being distributed into the conditioned space.
  - i. *NOTE: For ducted indoor units that have had external heat coils added (such as an electric duct heater or a hot water coil) the indoor fan could be set to run continuously during defrost. By allowing the indoor fan to run during defrost, heat can be provided to the conditioned space during defrost. For current generation ducted indoor units this can be accomplished by removing jumper CN22/CN4Y on the indoor unit Fan Control Board. CN24 can be used to provide power to an external relay that operates the external heater. For convenience you can order Mitsubishi's relay kit using part number "CN24-Relay-Kit-CM3)."*
- c. The outdoor fan will stop, allowing the outdoor coil to increase temperature to eliminate frost more efficiently.
- d. Compressor frequency will run at a high speed to increase discharge gas temperature.
- e. Under certain outdoor ambient conditions some steam may be visible at the outdoor unit as frost is eliminated, this is not unusual.

## 3. Defrost Termination. Defrost may be terminated by one of two conditions, as follows:

- a. Maximum defrost time cycle has expired. This is 12 minutes from the start of the defrost cycle or,
- b. When the outdoor pipe temperatures (TH9, TH11, TH6) have remained above the values shown in the below chart for at least four minutes with SW4 (916) being set to OFF or two minutes with SW4 (916) being set to ON.

**Table 14** PURY-HP Series Heat Recovery

UNIT CAPACITY	PURY-HP Series Heat Recovery	
	TH9, TH11 and TH6	
	SW4 (916) OFF	SW4 (916) ON
72,000 BTU/hr	45° F	54° F
96,000 BTU/hr	45° F	54° F

### NOTES AND GENERAL INFORMATION

- On R2-Series equipment the BC controller stops refrigerant flow to the indoor coil.
- When multiple outdoor units are twinned or tripled to create a single refrigerant system (such as a PURY-HP144 consisting of two individual PURY-HP72's piped to each other); if one module calls for defrost both units will go in to defrost at the same time.
- When there are multiple CITY MULTI outdoor refrigerant systems connected on the same M Net control bus, if one refrigerant system is already in defrost another refrigerant system cannot enter defrost until the first has completed its cycle. This prevents the conditioned space from excessive drops in temperature.
- A defrost cycle can be forced if at least 10 minutes have passed since the last defrost has ended. To force a defrost cycle set DIP Switch SW4 (913) to the ON position.
- Even if the defrost prohibit timer is set to 90 minutes (or 150 minutes for "Condition 3" to be met), the actual defrost-prohibit time for the next defrost cycle is 50 minutes if the last defrost cycle took 12 minutes.

- Once a defrost cycle is initiated, defrost operation will continue even if the indoor units stop or indoor unit Thermo-OFF has been reached.
- If an error/problem is detected during a defrost cycle, defrost operation will be stopped and the defrost prohibit time based upon compressor operating time will be set to 20 minutes.
- Outdoor coil frosting will impact the heating/defrosting cycle most commonly when the outdoor ambient temperature ranges from 26° F to 36° F. At colder outdoor temperatures frost accumulation is less. Product service manuals contain charts showing expected degradation.
- Outdoor units should be elevated above typical snowfall levels to improve draining of the outdoor coil during defrost and to reduce snow accumulation on the coil.

## SECTION 2C: Hyper-Heating R2-Series, ON-Defrost

**Table 15** H2i Hyper-Heating R2-Series Applicable Outdoor Unit Models

PURY-HP72TKMU-A-H	PURY-HP72YKMU-A	PURY-HP96TKMU-A-H	PURY-HP96YKMU-A
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### 1. ON-Defrost Overview.

- a. ON-Defrost is an optional setting for PURY-HP outdoor units. This is enabled by setting SW4 (848) to the ON position.
- b. The ON-Defrost approach used on VRF systems will not noticeably increase or decrease the overall heating provided. This is due to reduced heating capacity during ON-Defrost and more continuous ON-Defrost periods.
- c. ON-Defrost allows indoor unit heating to continue, even during a defrost cycle. This is facilitated by defrosting only one half of the outdoor system coil at any one time while the other half continues to operate normally.
- d. When a single outdoor unit is applied (such as a PURY-HP72) one half of the units outdoor coil will be defrosted, and then the other half as needed.
- e. When a combined outdoor system is applied (such as a PURY-HP144) one outdoor unit will go into defrost while the other outdoor unit continues to operate in the heating mode.

### 2. ON-Defrost Initiation.

To set the system to ON-Defrost SW4 (848) must be set to the ON position.

- a. ON-Defrost operation will start when all of the conditions listed in the table below are met (outside temperature, cumulative compressor operation time, and pipe temperature):
- b.

**Table 16** ON-DEFROST INITIATION - PURY-HP MODELS (H2i Hyper-Heat R2-Series)

	SINGLE UNIT	COMBINED UNITS
<b>Outside Air Temp (TH7)</b>	Outside temperature must be between 38°F and 45°F. (If outdoor temperature is outside of this range a normal defrost will occur)	
<b>Cumulative Compressor Operating Time</b>	When 30 minutes have passed	When 50 minutes have passed
<b>Outdoor Unit Pipe Temp (TH6)</b>	TH6>TH7-14° F	TH6>TH7-18° F

3. **During Defrost Operation:** Indoor units will continue to operate in the heating mode.
4. **Defrost Termination.** On-Defrost operation will end when the ON-Defrost operation time in the table below is reached, or when the pipe temperatures of TH9 and TH11 have remained above the temperature shown in the table below for at least three minutes.

**Table 17 ON-DEFROST TERMINATION - PURY-HP MODELS (H2i Hyper-Heat R2-Series)**

	SINGLE UNIT	COMBINED UNITS
<b>ON-Defrost Operation Time</b>	When 20 minutes have passed	When 30 minutes have passed
<b>Piping Temperature (TH9, TH11)</b>	43° F	

**NOTES AND GENERAL INFORMATION**

- During ON-Defrost the overall heating capacity of indoor units will be somewhat reduced as a result of only one half of the outdoor system coil absorbing heat during a ON-Defrost cycle.
- The ON-Defrost approach (of a VRF system) will not noticeably increase or decrease the overall heating performance of a system throughout the day.
- When multiple outdoor units are twinned to create a single refrigerant system (such as a PURY-HP144 consisting of two individual PURY-HP72's piped to each other); only one of the units will enter ON-Defrost while the other continues providing heat to the indoor units.
- Outdoor units should be elevated above typical snowfall levels to improve draining of the outdoor coil during defrost and to reduce snow accumulation on the coil.