

## CN24 Protocol for PEFY-P\_NMAU-E4

Commercial HVAC



### 1. Overview of CN24 Protocol

Mitsubishi Electric's CN24 protocol is used on CITY MULTI

indoor units to manage auxiliary heat output. With the suitable adapter, an auxiliary heat source can be interlocked with the indoor units.

### 2. How it Works

For each Mitsubishi Electric's CITY MULTI indoor unit, a PAC-YU25HT adapter is required, and it can provide up to two (2) stages of auxiliary heating (dependent on the type of indoor unit used).

### 3. Operation Details for PEFY-P\_NMAU-E4

For our new PEFY-P\_NMAU-E4 ducted units, they are equipped with two (2) stages auxiliary heat outputs (EH1 and EH2). Functionality may be enabled or disabled using function setting 107. By default, function 107 is set to 2 (time delay available). Function 107 set to 1 cancels the time delay for auxiliary heat output. Detailed operation of function 107 is found below:

- **Function 107 = 2 (time delay available)**

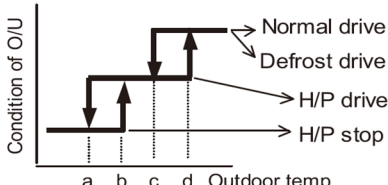
Outdoor unit setting	Condition of outdoor unit		PEFY-P-NMAU-E4				
			DIP S/W (Indoor unit)*1		Heater control		
			SW3-2	SW3-4	Pattern	Defrost	Error
DIP S/W OFF *3	N / A		OFF	-	Heater not Available		
			ON	OFF	Heater Available	OFF	OFF
			ON	ON	Heater Available	ON	ON*2
DIP S/W ON *3	 <p>Condition of OIU</p> <p>Normal drive</p> <p>Defrost drive</p> <p>H/P drive</p> <p>H/P stop</p> <p>a b c d Outdoor temp.</p> <p>Parameters a/b/c/d are set by maintenance tool.</p>	Normal drive	OFF	-	Heater not Available		
			ON	OFF	Heater Available	OFF	OFF
			ON	ON	Heater Available	ON	ON*2
		Defrost drive H/P drive H/P stop	OFF	-	Heater not Available		
			ON	OFF	Heater Available	OFF	OFF
			ON	ON	Heater Available	ON	ON*2

Table 1 Function Setting for 107=2

- **Function 107 = 1 (time delay canceled)**

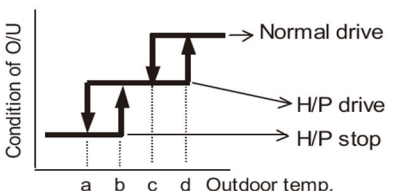
Outdoor unit setting	Condition of outdoor unit	PEFY-P-NMAU-E4					
		DIP S/W (Indoor unit)*1	Heater control				
		SW3-4	EH1	EH2	Defrost	Error	
DIP S/W OFF *3	N / A	OFF	Heater Available	Heater not Available	OFF	OFF	
		ON	Heater Available		ON	ON*2	
DIP S/W ON *3	 <p>Parameters a/b/c/d are set by maintenance tool.</p>	Normal drive	Heater not Available		OFF	OFF	
		H/P drive	OFF	Heater Available	Heater not Available	OFF	OFF
		H/P stop	ON	Heater Available		ON	ON*2
		H/P drive H/P stop	ON	Heater Available		ON	ON*2

Table 2 Function Setting for 107=1

- \*1 Default settings: SW3-2 OFF, SW3-4 OFF
- \*2 Heater will not operate during all error modes \*4
- \*3 Please set function codes that are shown on the outdoor unit service manuals (DIP S/W Functions).
- \*4 Heater On signal cannot be output in the following cases for safety reasons.
  - Return air temperature sensor fault (Error code: 5101)
  - Indoor unit fan operation error (Error code: 4109)
  - Indoor unit fan motor error (Error code: 4114)
  - Transmission error (Error code: 6\*\*\*, 7\*\*\*)
  - When heating mode is prohibited
  - When demand control or capacity save is set to 0%
  - During refrigerant recovery mode on PUMY system
  - For a few minutes when change from thermo OFF to ON or ON to OFF in R2/WR2 system

- **Time delay available: function setting for 107 = 2**

Mode Change	Condition				
EH1 ON	$(T_O - T_{RA}) > 1.5^\circ\text{C} + \text{Thh1}$	AND	$T_{RA}$ has not increased by $0.5^\circ\text{C}$ in X min		
EH2 ON	EH1 ON for $> 5$ min	AND	$T_O - T_{RA} > 1.5^\circ\text{C} + \text{Thh1}$	AND	$T_{RA}$ has not increased by $0.5^\circ\text{C}$ in 5 min
EH1 OFF	$(T_O - T_{RA}) \leq 0.5^\circ\text{C}$				
EH2 OFF					

Table 3 Thermo ON/ OFF condition for function setting 107=2

- **Time delay canceled: function setting for 107 = 1**

DIP SW3-4	ON	ON	OFF
DIP SW3-2	ON	OFF	ON/OFF
Mode Change	Condition		
EH1 ON	$(T_O - T_{RA}) > 1.5^\circ\text{C} + T_{hh1}$	$(T_O - T_{RA}) > 0.5^\circ\text{C} + T_{hh1}$	$(T_O - T_{RA}) > 1.5^\circ\text{C} + T_{hh1}$
EH2 ON	$(T_O - T_{RA}) > 2.0^\circ\text{C} + T_{hh1}$	$(T_O - T_{RA}) > 1.0^\circ\text{C} + T_{hh1}$	Not Available
EH1 OFF	$(T_O - T_{RA}) \leq 0.5^\circ\text{C}$	$(T_O - T_{RA}) \leq -0.5^\circ\text{C}$	$(T_O - T_{RA}) \leq -0.5^\circ\text{C}$
EH2 OFF			

Table 4 Thermo ON/ OFF condition for function setting 107=1

**Key:**

**EH1:** Electric Heater 1.

**EH2:** Electric Heater 2.

**X:** Time delay (Selectable. Default is 20 min, selectable to 10, 15, or 25 min).

**T<sub>O</sub>:** Set point temperature.

**T<sub>RA</sub>:** Return air temperature.

**T<sub>hh1</sub>:** The additional differential for heater output can be set by function 84,85 as per table 5 below.

**X** is determined by function 108 setting as per table 6 below.

No.84	°C	No.85	°C
1	1	1	0.1
2	2	2	0.2
3	3	3	0.3
4	4	4	0.4
5	5	5	0.5
10	0	6	0.6
		7	0.7
		8	0.8
		9	0.9
		10	0.0

Table 6 Settings for function 84,85

Function *1	Action *3
108-1	Set Time Delay to <u>10</u> minutes
108-2	Set Time Delay to <u>15</u> minutes
108-3	Set Time Delay to <u>20</u> minutes
108-4	Set Time Delay to <u>25</u> minutes

Table 5 Function Setting for 108

\*1 Time delay can only be selected with MA controller. If use of a non-MA controller is desired, the time delay must first be selected with the MA controller. Then the non-MA controller can be attached and used.

\*2 The default time delay setting is 20 minutes.

\*3 Time delays are approximate.

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