

# MANUFACTURED FOR: MITSUBISHI ELECTRIC & ELECTRONICS USA

## External Heater Adapter CN24RELAY-KIT-CM3



### Installation Manual

**R410A Series**

This manual describes installation of the External Heater Adapter that connects to CITY MULTI air conditioner R410A series indoor units. This product has special wiring to drive an electric heater with the air conditioner. Please refer to the technical manual for details. For your safety, be sure to read the “1 Safety Precaution” described below thoroughly before installing the CN24RELAY-KIT-CM3.

## 1 Safety Precaution

- The following two symbols are used to denote dangers that may be caused by incorrect use.

 <b>WARNING</b>	This symbol denotes what could lead to serious injury or death if your misuse the CN24RELAY-KIT-CM3.
 <b>CAUTION</b>	This symbol denotes what could lead to a personal injury or property damage if CN24RELAY-KIT-CM3 is misused.

- After reading this instruction manual, keep it in a place where the end user can find it anytime he or she wants to it. When someone moves, repairs or uses the CN24RELAY-KIT-CM3, make sure that this manual is forwarded to the final user.

### **WARNING**

<p><b>Ask your dealer or technical representative to install the unit.</b> Any deficiency caused by your own installation may result in an electric shock or fire.</p>	<p><b>Stop the operation if any malfunction occurs.</b> If malfunction occurs (burning smell, etc.) stop the operation and turn off the power supply. Contact your dealer or technical representative. If the controller continues to operate after a malfunction occurs, this may cause damage, electric shock or fire.</p>
<p><b>Ensure that installation work is done correctly following this instruction manual</b> Any deficiency caused by installation may result in an electric shock or fire.</p>	<p><b>Do not turn on the main power until installation has been completed.</b> Doing so may result in electric shock or fire.</p>
<p><b>Firmly connect the wiring using the specified cables.</b> <b>Carefully check that the cables do not exert any forces on the terminals.</b> Improper wiring connections may produce heat and possibly a fire.</p>	<p><b>Leave sufficient space between heater and indoor unit to allow for air movement to prevent the indoor unit from overheating.</b> If they are installed too closely and the indoor unit temperature exceeds 40 °C, malfunctions or fire may result.</p>
<p><b>Never modify or repair the CN24RELAY-KIT-CM3.</b> Any deficiency caused by your modification or repair may result in an electric shock or fire. Consult with your dealer about repair.</p>	<p><b>Keep the heater clean to keep the indoor unit from accumulating dust on the components.</b> Dust particles that enter the indoor unit may cause fire.</p>
<p><b>All electrical work must be performed by a licenced technician, according to local regulations and the instructions given in this manual.</b> Any lack of electric circuit or any deficiency caused by installation may result in an electric shock or fire.</p>	<p><b>When air conditioner and heater are configured to perform an inter-locked operation, do not use any other type of cables except this external heater adapter (CN24RELAY-KIT-CM3).</b> The use of any other type of cables may result in malfunctions or fire.</p>
<p><b>Do not move and re-install the CN24RELAY-KIT-CM3 yourself.</b> Any deficiency caused by installation may result in an electric shock or fire. Ask your distributor or special vendor for moving and installation.</p>	<p><b>Do not build a heater into the indoor unit.</b> Doing so may result in fire.</p>

### **CAUTION**

<p><b>Do not install in any place exposed to flammable gas leakage.</b> Flammable gases accumulated around the CN24RELAY-KIT-CM3 may cause an explosion.</p>	<p><b>Do not install in any place where acidic or alkaline solution or special spray are often used.</b> Doing so may cause an electric shock or malfunction.</p>
<p><b>Do not use in any special environment.</b> Using in any place exposed to oil (including machine oil), steam and sulfuric gas may deteriorate the performance significantly or give damage to the component parts.</p>	<p><b>Do not install in any steamy place such a bathroom or kitchen.</b> Avoid any place where moisture is condensed into dew. Doing so may cause an electric shock or malfunction.</p>
<p><b>Wire so that it does not receive any tension.</b> Tension may cause wire breakage, heating or fire.</p>	<p><b>Do not wash with water.</b> Doing so may cause an electric shock or malfunction.</p>
	<p><b>Do not install in any place at a temperature of more than 40°C (104°F) or less than 0°C (32°F) or exposed to direct sunlight.</b></p>

## 2 Parts list

Check that the following parts are included in the package.

- (1) External output cable (with a white connector) .....2 in total  
Two types of cables with different connectors are included.
- (2) Panel heater connector (white connectors).....3 in total
- (3) 12 VDC SPST Relay ..... 1 in total

### 3 Connection to the Indoor Unit

Use the cables that fit the connectors on the indoor unit control board. The items listed in this parts list cannot be used with the following models.

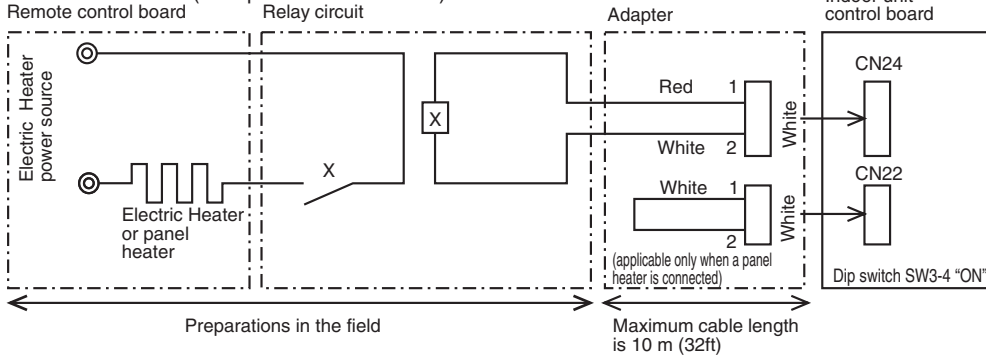
- PMFY-BM
- PMFY-AM

- (1) External output cables both having white connectors. Connectors are physically different. Please choose the correct connector that fits the particular PCB. Connectors snap in but should not be too difficult to seat.  
This cable is used to connect the relay circuit for an interlocked operation with either an electric or a panel heater. Connect the cable to CN24 on the indoor unit control board.
- (2) Panel heater connector (with a white connector)  
This connector is used to perform an interlocked operation with a panel heater. Depending on the indoor unit control board specification, connect the cable either to CN4Y or CN22 as appropriate.

### 4 Field-supplied Wiring

A basic connection method is shown below.

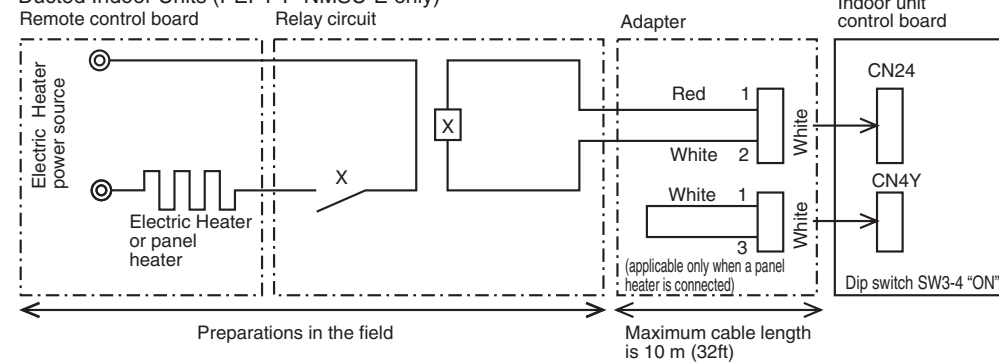
- (1) Ducted Indoor Units (Except PEFY-P-NMSU-E)  
Remote control board Relay circuit



Outdoor unit control board

- PUHY, PURY-P-TGMU type Dip switch SW5-2 "ON"
- PUHY, PURY-P-YHMU type Dip switch SW5-10 "ON"
- PUMY series Dip switch SW4-4 "ON"

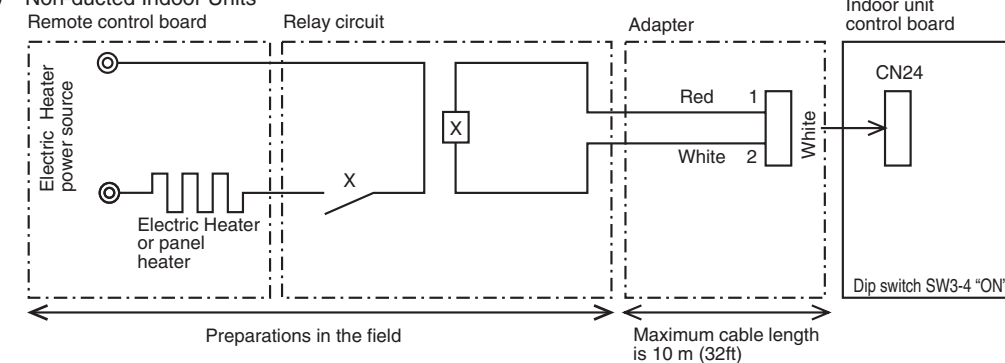
- (2) Ducted Indoor Units (PEFY-P-NMSU-E only)  
Remote control board Relay circuit



Outdoor unit control board

- PUHY, PURY-P-TGMU type Dip switch SW5-2 "ON"
- PUHY, PURY-P-YHMU type Dip switch SW5-10 "ON"
- PUMY series Dip switch SW4-4 "ON"

- (3) Non-ducted Indoor Units  
Remote control board Relay circuit



Outdoor unit control board

- PUHY, PURY-P-TGMU type Dip switch SW5-2 "ON"
- PUHY, PURY-P-YHMU type Dip switch SW5-10 "ON"
- PUMY series Dip switch SW4-4 "ON"

For relay X use the specifications given below Operation coil

Rated voltage : 12VDC

Power consumption : 0.9W or less

The length of the electrical wiring for the CN24RELAY-KIT-CM3 is 2 meters (6-1/2 ft)

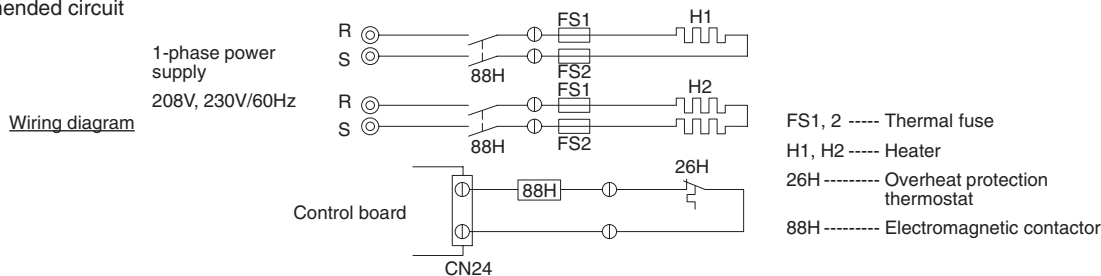
To extend this length, use sheathed 2-core cable.

Control cable type : CVV, CVS, CPEV or equivalent.

Cable size : 0.5 mm<sup>2</sup> ~ 1.25 mm<sup>2</sup> (16 to 22 AWG)

Don't extend the cable more than 10 meters (32ft)

Recommended circuit



## 5 Wiring Restrictions

Keep the length of the cable connecting to the circuit board of the indoor unit shorter than 10 meters (32ft).

Longer than 10 meters (32ft) could cause improper operation.

Use a transit relay when extending wiring such as remote wiring.

## 6 Dip S/W setting for outdoor units and indoor units

(1) Heater control

\*Table 1 shows how the field-installed heater is controlled. Select the desired pattern in the table below, and set the DIP S/W on the outdoor and indoor units as shown in Table 1. See “(3 Connection to the Indoor Unit)” for details. The table below shows Heater Control patterns #A and B.

Table.1

Outdoor unit setting	Condition of outdoor unit	Duct unit PE/PD/PF-NR (NL) (PEFY-P06, 08, 12, 15, 18, 24NMSU-E)		NON duct unit (PL/PK/PC)
DIP S/W OFF In the case of: <TGMU> S/W5-2 OFF <THMU> S/W5-10 OFF <PUMY> S/W4-4 OFF	N/A	DIP S/W3-4 OFF (Indoor unit)	Heater control #A (defrost/error :Heater OFF)	Heater control #A (defrost/error :Heater ON)
		DIP S/W3-4 ON (Indoor unit)	Heater control #A (defrost/error :Heater ON)	
DIP S/W ON In the case of: <TGMU> S/W5-2 ON <THMU> S/W5-10 ON <PUMY> S/W4-4 ON	<p>Condition of O/U</p> <p>Normal drive Defrost drive H/P drive 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	Heater OFF	Heater OFF
		Defrost drive H/P drive H/P stop	DIP S/W3-4 OFF (Indoor unit)	Heater control #A (defrost/error :Heater OFF)
DIP S/W3-4 ON (Indoor unit)	Heater control #B (defrost/error :Heater ON)			

Table.2

Heater control #A	Heater OFF Inlet air temp. ≥ set temp. Heater ON Inlet air temp. < set temp. -4F	Heater control #B	Heater OFF Inlet air temp. ≥ set temp. Heater ON Inlet air temp. < set temp. -1.8F
	<p>Inlet air temp.</p> <p>Heater output</p> <p>ON OFF</p>		<p>Inlet air temp.</p> <p>Heater output</p> <p>ON OFF</p>

**Note:**

<For heater>

Initial setting: 4 °F (can be set to a value between 1.8 and 9 °F by Maintenance Tool)

**Note:**

- (1) On the ducted model units (except the Fresh air intake type), turning on the heater with the fan setting set to OFF requires that the DIP S/W and connectors on the indoor units\*1 are set on site (in case of PEFY-P06, 08, 12, 15, 18, 24NMSU-E).
- \*1: DIP SW3-4, CN24, and CN4Y
- (2) On the Fresh air intake type units, the heater cannot be turned on with the fan setting set to OFF.
- (3) Non-ducted models do not require the settings described in "(1) Heater control" above.
- (4) Back-up heating will not be performed when the heater turns on while demand control is performed.
- (5) This is applicable only to the R410A series. Make the settings for the following dipswitches on the outdoor unit control board before switching on the power.

(2) Fan control

\*By using the CN24RELAY-KIT-CM3 (optional parts), fan speed can be controlled.

Duct unit PE/PD/PF-NR (NL) (PEFY-P06, 08, 12, 15, 18, 24NMSU-E)			
Pattern	CN4Y for FAN control	DIP S/W3-4 (Indoor unit)	Fan in defrost
1	Not use	OFF	Stop (Heater OFF)
2		ON	L / LL / Set *
3	Use	OFF	Stop (Heater OFF)
4		ON	Stop (Heater ON)

**Note:**

\*Depend on SW1-7/1-8 (Heater ON)

SW3-1	SW1-7	SW1-8	*1 Fan speed
OFF	OFF	OFF	Very low
OFF	ON	OFF	Low
OFF	OFF	ON	Remote controller setting
OFF	ON	ON	STOP (*2 Remote controller setting)
ON	ON	ON	Stop

**Note:**

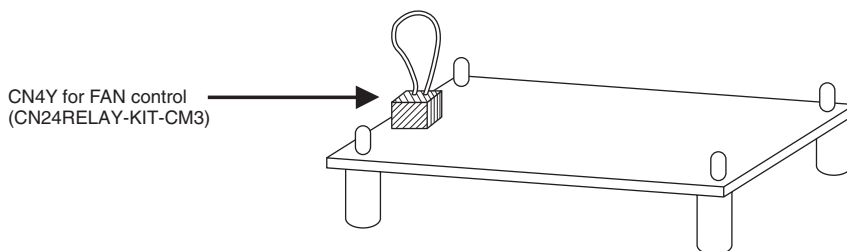
\*1 The fan operates at the same speed settings as shown in this table during the Heating Thermo-OFF mode.

\*2 If Pattern 2 in the table above is selected for the fan control pattern, the fan will follow the setting of the remote controller.

Reference (not applicable to the ducted models)

NON duct unit (PL/PK/PC)		
CN22 for FAN control	DIP S/W (Indoor unit)	Fan in defrost
N/A	N/A	Stop (Heater ON)

<Image>



MANUFACTURED FOR:  
MITSUBISHI ELECTRIC & ELECTRONICS USA, 2009