# Run / Standby Panel

# PANEL_RS1

**FOR INSTALLERS**

# INSTALLATION MANUAL
## Version 1.03

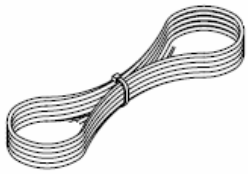
**For safe and correct use, please read this installation manual thoroughly before installing the PANEL_RS1.**

**MITSUBISHI ELECTRIC**

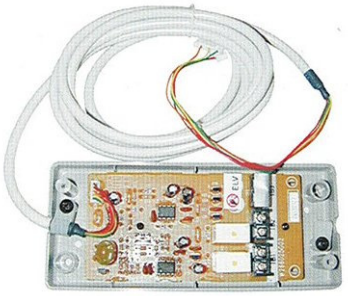
## 1

**[Fig. 1]**

A



B

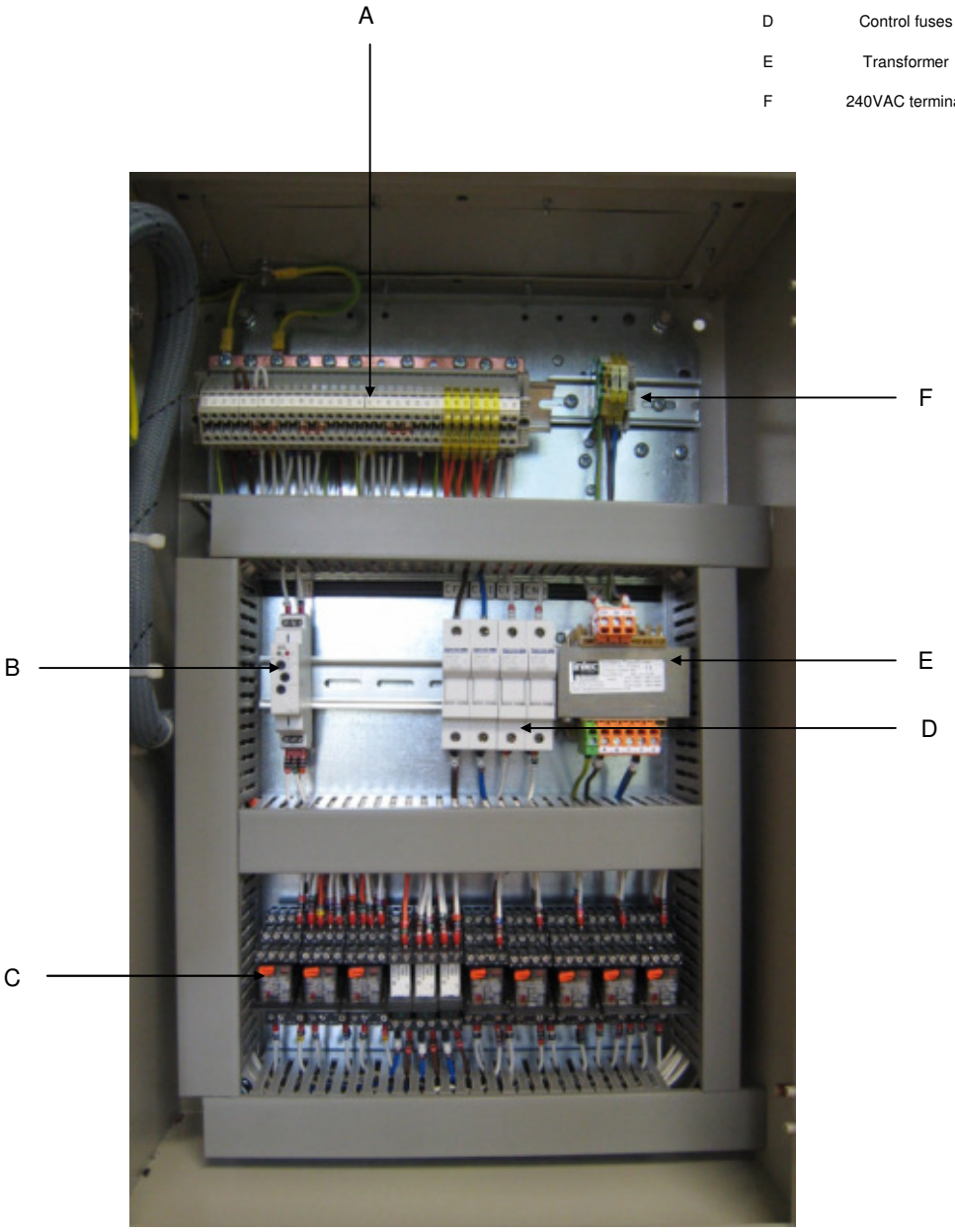


| | |
|---|---|
| A | 2 x PAC-SA89TA |
| B | 2 x PAC-SF40RM |

## 2

**[Fig. 2]**

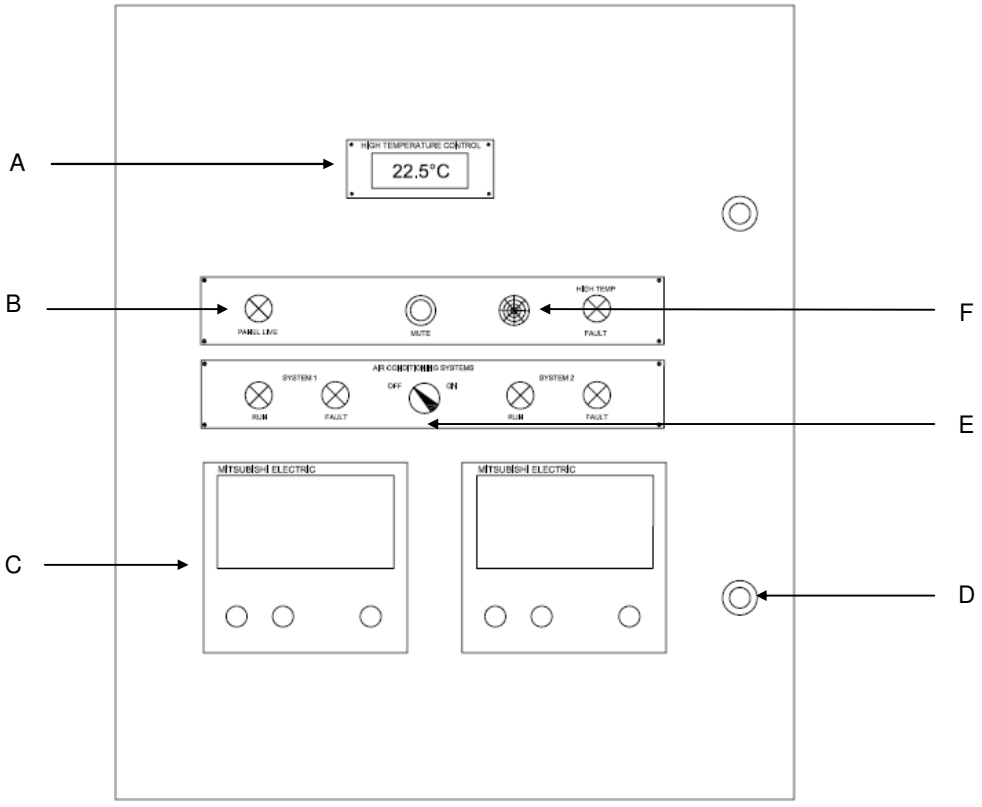
| | |
|---|---|
| A | Input / output terminal |
| B | Time clock |
| C | Relays |
| D | Control fuses |
| E | Transformer |
| F | 240VAC terminal |



**3**

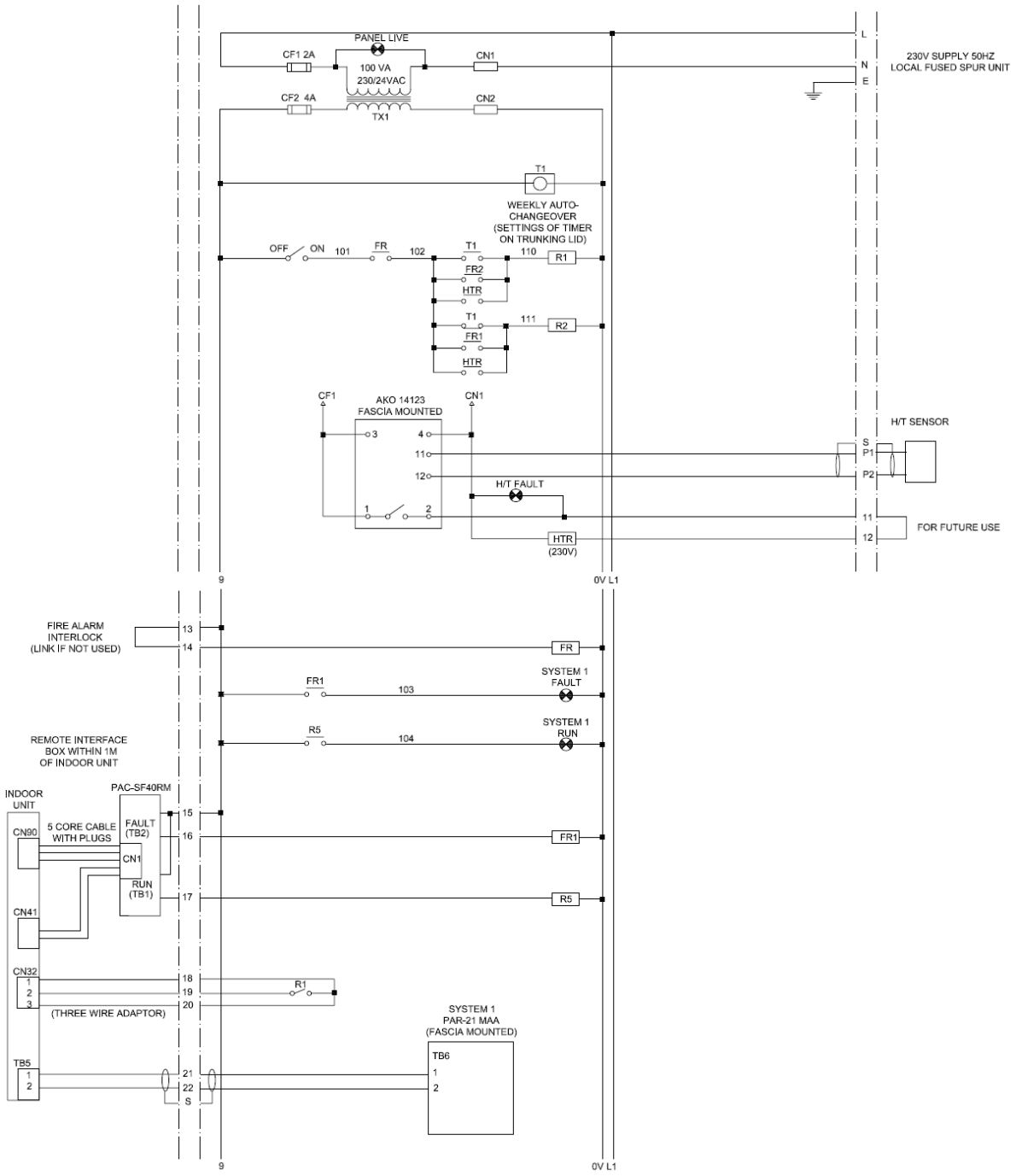
**[Fig. 3]**

| | |
|---|---|
| A | Thermostat |
| B | Lamp status |
| C | Remote controllers |
| D | Door lock |
| E | Air conditioning On/Off switch |
| F | Buzzer switch |



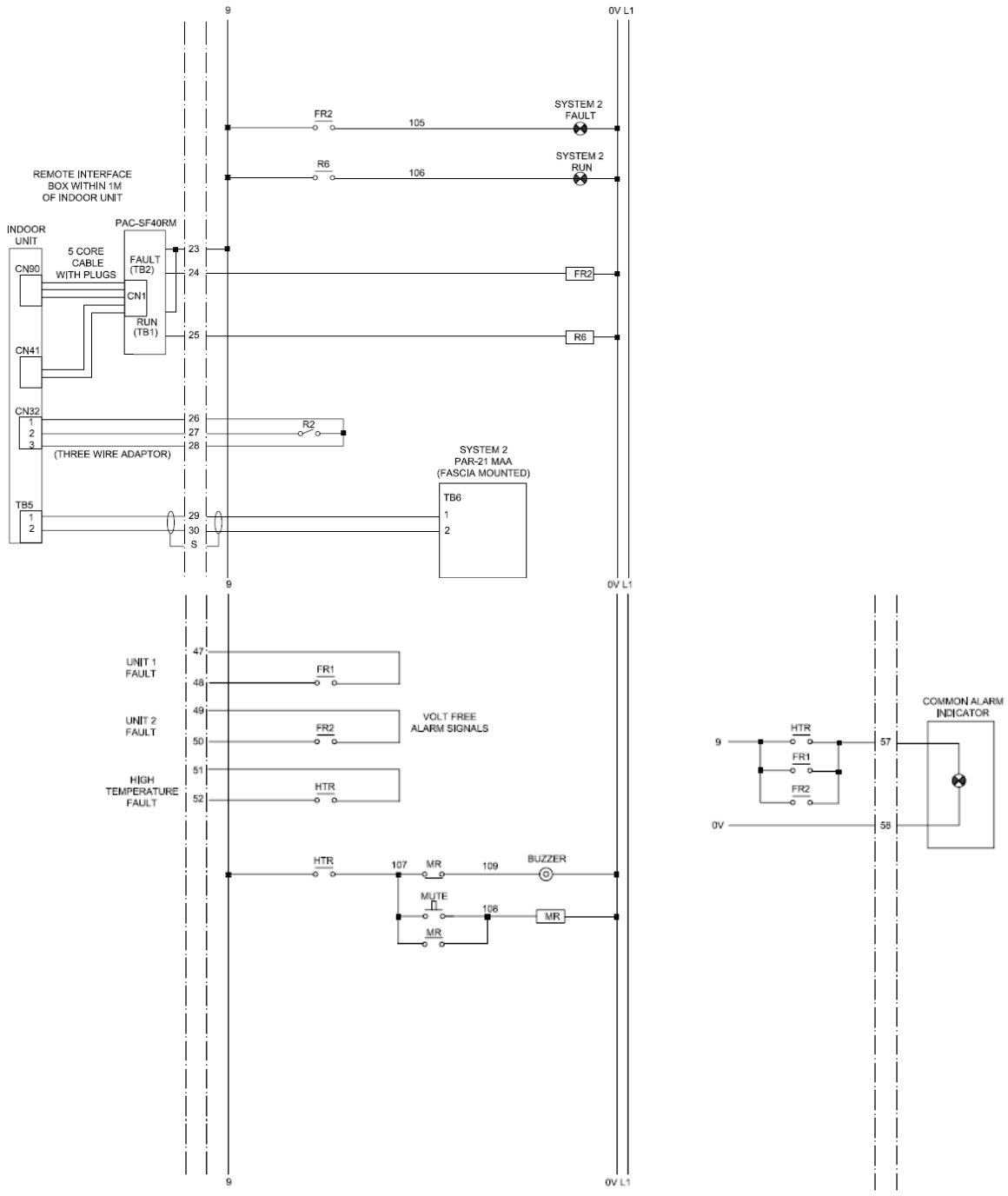
**4**

**[Fig. 4]**


PANEL LIVE
CF1 2A
100 VA
230/24VAC
CN1
CF2 4A
CN2
TX1
L
N
E
230V SUPPLY 50HZ
LOCAL FUSED SPUR UNIT
T1
WEEKLY AUTO-
CHANGEOVER
(SETTINGS OF TIMER
ON TRUNKING LID)
OFF
ON
101
FR
102
T1
110
R1
FR2
HTR
T1
111
R2
FR1
HTR
CF1
AKO 14123
FASCIA MOUNTED
CN1
3
4
11
12
H/T FAULT
1
2
HTR
(230V)
H/T SENSOR
S
P1
P2
11
12
FOR FUTURE USE
9
0V L1
FIRE ALARM
INTERLOCK
(LINK IF NOT USED)
13
14
FR
FR1
103
SYSTEM 1
FAULT
R5
104
SYSTEM 1
RUN
REMOTE INTERFACE
BOX WITHIN 1M
OF INDOOR UNIT
INDOOR
UNIT
PAC-SF40RM
CN90
5 CORE CABLE
WITH PLUGS
FAULT
(TB2)
CN1
RUN
(TB1)
15
16
17
FR1
R5
CN41
CN32
1
2
3
18
19
20
R1
(THREE WIRE ADAPTOR)
SYSTEM 1
PAR-21 MAA
(FASCIA MOUNTED)
TB6
1
2
TB5
1
2
21
22
S
9
0V L1

**5**

**[Fig. 5]**


9
0V L1
FR2
105
SYSTEM 2
FAULT
R6
106
SYSTEM 2
RUN
REMOTE INTERFACE
BOX WITHIN 1M
OF INDOOR UNIT
INDOOR
UNIT
PAC-SF40RM
5 CORE
CABLE
WITH PLUGS
CN90
CN1
FAULT
(TB2)
RUN
(TB1)
CN41
CN32
1
2
3
(THREE WIRE ADAPTOR)
23
24
25
26
27
28
FR2
R6
R2
SYSTEM 2
PAR-21 MAA
(FASCIA MOUNTED)
TB6
1
2
TB5
1
2
29
30
S
9
0V L1
UNIT 1
FAULT
47
48
FR1
UNIT 2
FAULT
49
50
FR2
VOLT FREE
ALARM SIGNALS
HIGH
TEMPERATURE
FAULT
51
52
HTR
HTR
107
MR
109
BUZZER
MUTE
106
MR
MR
9
HTR
FR1
FR2
57
0V
58
COMMON ALARM
INDICATOR
9
0V L1

# Contents

# 1. Safety precautions

- **Before installing the unit, make sure you read all the "Safety precautions"**
- **The "Safety precautions" provide very important points regarding safety. Make sure you follow them**

**Symbols used in the text**

**⚠ Warning:**
**Describes precautions that should be observed to prevent danger of injury or death to the user.**

**⚠ Caution:**
**Describes precautions that should be observed to prevent damage to the unit.**

**⚠ Warning:**
**Carefully read the labels affixed to the main unit**

**⚠ Warning:**

- **Ask the dealer or an authorised technician to install the unit**
  - Improper installation by the user may result in water leakage, electric shock, or fire
- **Use the specified cables for wiring. Make the connections securely so that any outside forces acting on the cables are not applied to the terminals**
  - Inadequate connection and fastening may generate heat and cause a fire
- **Never repair the unit. If the controller must be repaired, consult the dealer**
  - If the unit is repaired improperly, electric shock, or fire may result
- **When handling this product, always wear protective equipment. EG: Gloves, full arm protection and safety glasses**
  - Improper handling may result in injury
- **Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard", "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit**
  - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result
- **Keep the electric parts away from any water - washing water etc…**
  - Contact may result in electric shock, fire or smoke
- **Do not reconstruct or change the settings of the protection devices**
  - If the protection device is shorted or operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result
- **To dispose of this product, consult your dealer**

**⚠ Caution:**

- **Ground the unit**
  - Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground lines. Improper grounding may result in electric shock
- **Install the power cable so that tension is not applied to the cable**
  - Tension may cause the cable to break and generate heat which may, in turn, cause fire
- **Install a leak circuit breaker, as required**
  - If a leak circuit breaker is not installed, electric shock may result
- **Use power line cables of sufficient current carrying capacity and rating**
  - Cables that are too small may leak, generate heat, and cause a fire
- **Use only a circuit breaker and fuse of the specified capacity**
  - A fuse or circuit breaker of a larger capacity or a steel or copper wire may result in a general unit failure or fire
- **Be careful that the installation base is not damaged**
  - If the damage is left uncorrected, the unit may fall and cause personal injury or property damage
- **Be very careful regarding product transportation**
  - Two people should be used to carry products of 20kg or more
  - Some products use PP bands for packaging. Do not use any PP bands for a means of transportation
- **Safely dispose of the packing materials**
  - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries
  - Tear apart and throw away plastic packaging bags so that children will not play with them - If children play with a plastic bag which has not been torn apart, they face the risk of suffocation

# 2. Overview

The run/standby panel is used to automatically change over two Air Conditioning indoor units.

The panel will be fed with a 240VAC power supply.

The panel is fitted with a selectable day time switch with battery back-up and latching relay to permit one indoor unit to run for instance 7 days, after this the panel will automatically change over to the next indoor unit for 7 days etc.

The panel is designed that if one indoor unit goes to fault while running it would automatically bring in the backup indoor unit.

The high temperature thermostat option will allow the two indoor units to run together if a high temperature exists. A high temperature warning lamp will indicate.

The sounder & mute option will allow any fault condition received by the control panel (i.e. unit fault, or high temperature) to initiate a sounder on the panel door. A mute button is fitted to silence the sounder.

Volt free terminals are fitted to allow fault signals to be transmitted to any external monitoring system.

The panel is supplied with accessories to interface with the Air Conditioning indoor unit:

- 3 wire adaptor to control the On/Off
- PAC-SF40RM to monitor Run and Faults with Mr Slim indoor units

**Figure 1** shows the accessories supplied with the panel.

**Figure 2** shows the inside of the panel.

**Figure 3** shows the front panel.

**Figure 4** shows the wiring diagram of the panel.

## 3. Panel size and weight

The panel details are:

- Height 600mm
- Width 400mm
- Depth 210mm
- Weight 21Kg

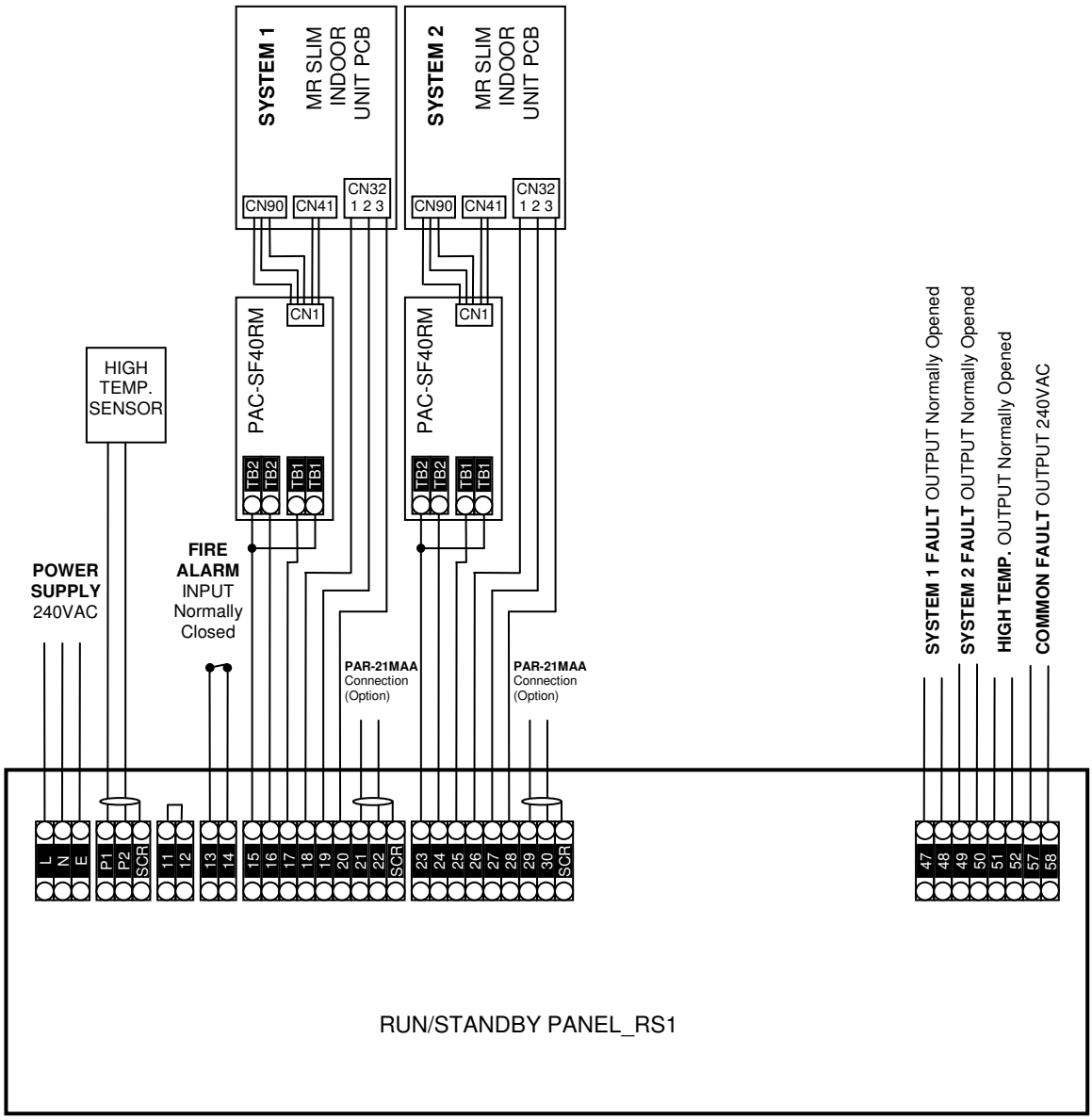
# 4. Selecting an installation site

- Avoid locations in direct sunlight
- Avoid locations exposed to steam or oil vapour
- Avoid locations where combustible gas may leak, settle or be generated
- Avoid installation near machines emitting high-frequency waves
- Avoid places where acidic solutions are frequently handled
- Avoid places where sulphur-based or other sprays are frequently used
- Avoid areas of high humidity (when cooling operation is required)
- Install inside the building
- Install near the indoor units monitored and controlled

# 5. Installation

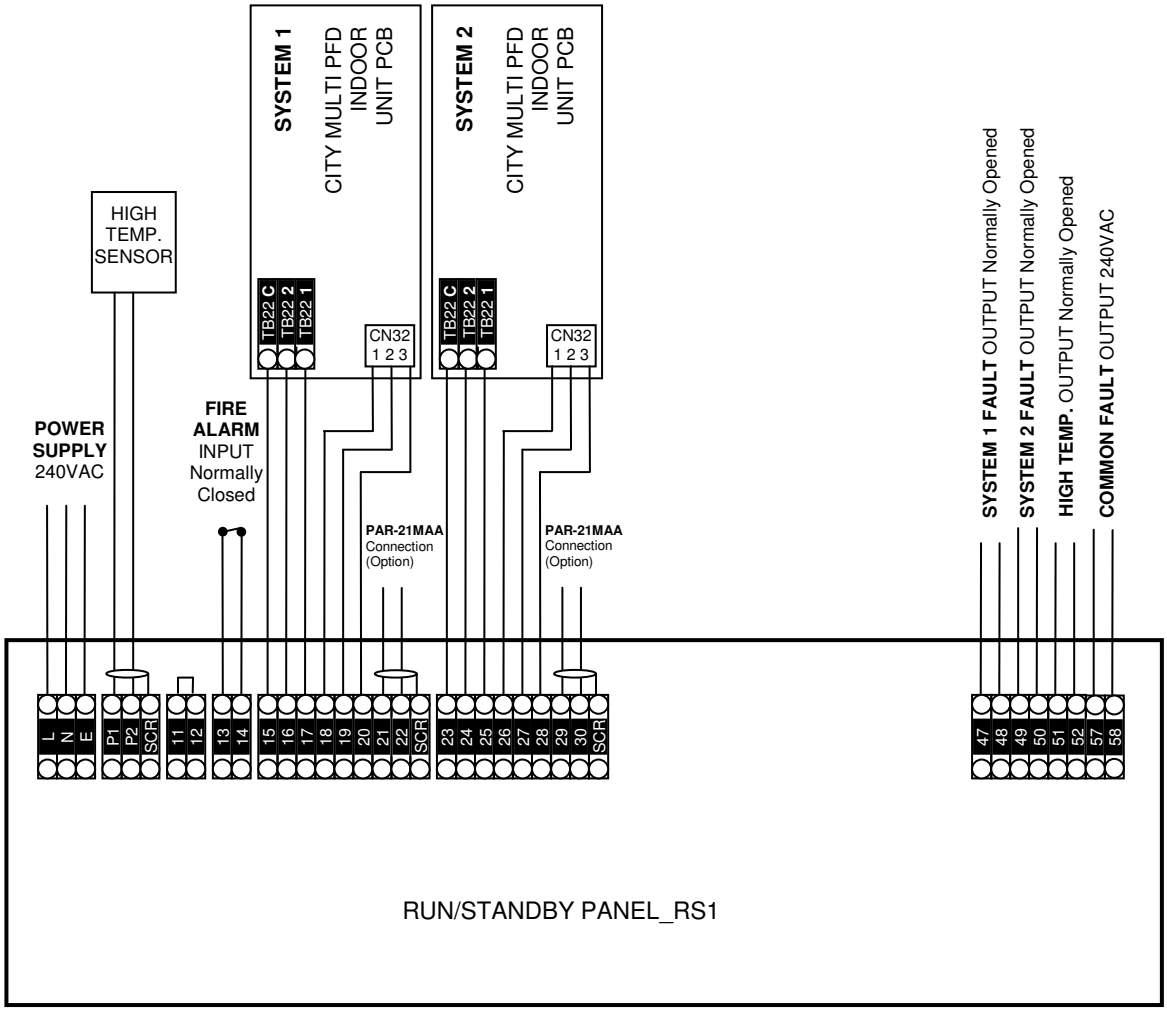
## *5.1. System diagram 1 – Connected to Mr Slim units*

Two Mr Slim indoor units can be connected to the PANEL_RS1 via two PAC-SF40RM and two PAC-SA89TA.



## *5.2. System diagram 2 – Connected to City Multi PFD units*

Two City Multi PFD indoor units can be connected to the PANEL_RS1 via two PAC-SA89TA. The PAC-SF40RM interfaces are not required.




*Please note that DIP SWITCH SW1-9 and SW1-10 must be switched **OFF** to activate level input with CN32 instead of pulse input.*

# 6. Electrical wiring

## 6.1. Precautions on electrical wiring

⚠ **Warning:**
**Electrical work should be done by qualified electrical engineers / electrician in accordance with "Engineering Standards for Electrical Installation" and supplied installation manuals. Dedicated circuits should also be used. If the power circuit lacks capacity or has an installation failure, it may cause a risk of electric shock or fire.**

- Be sure to take power from the special branch circuit
- Be sure to install an earth leakage breaker to the power
- Install the unit to prevent any of the control circuit cables (MNET transmission cables) coming into direct contact with the power cable outside the unit
- Ensure that there is no slack on all wire connections
- Never connect the power cable to leads for the transmission cables. This will damage the transmission cable
- Select control cables from the conditions given in “Type of control cables” section

## 6.2. Types of control cables

Wiring transmission cables

- Cable diameter: More than 1.25 $mm^2$ screened cable

## 6.3. Connecting wiring

### 6.3.1. Power supply wiring

Power supply cords of appliances shall not be lighter than design 245 IEC 57 or 227 IEC 57.

⚠ **Caution:**
**Do not use anything other than the correct capacity breaker and fuse. Using fuse, wire or copper wire with too large capacity may cause a risk of malfunction or fire.**

### 6.3.2. Connecting PAC-SA89TA

Connect the PAC-SA89TA to the CN32 terminal on the indoor unit. The other end of the wire must be connected to the panel (18, 19 and 20 for system 1 and 26, 27 and 28 for system 2).

### 6.3.3. Connecting PAC-SF40RM (for Mr Slim)

Connect the PAC-SF40RM to the CN90 and CN41 terminals on the Mr Slim indoor unit. The TB1 and TB2 terminals must be connected to the panel (15, 16 and 17 for system 1 and 23, 24 and 25 for system 2).

### 6.3.4. Connecting optional PAR-21MAA

Connect the optional PAR-21MAA to the MA remote controller terminal on the indoor unit. The other end of the wire must be connected to the panel (21 and 22 for system 1 and 29 and 30 for system 2). A CN22 connector is required for each wall mounted indoor unit.

# 7. Applicable Air Conditioning models

Below is a list of Air Conditioning models that can be connected to this panel:

- Mr Slim product range
- PFD City Multi VRF product range

Please note that:

- **A CN22 connector is required for each wall mounted indoor unit**
- The PAC-SF40RM is not required for the PFD units

# 8. Important notes

Please note that:

- **If the internal fuse fails on the panel all systems stop**
- **If the internal fuse fails on the panel the volt free contacts for remote alarm does not operate**
- **If the panel is switched off all indoor units stop**
- **If the panel is switched off the volt free contacts for remote alarm does not operate**
- **When the panel is first energised all indoor units start together**
- **If the power of the indoor unit is switched off, the panel will not automatically change over**

# 9. Additional information

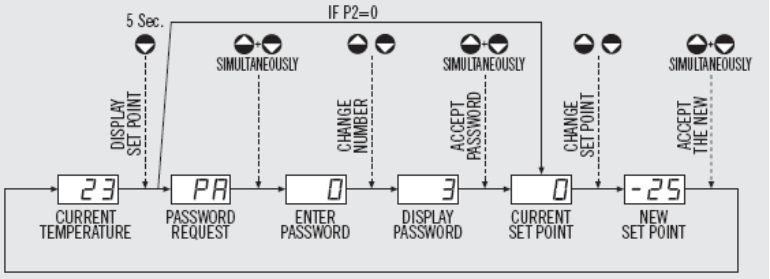
## *9.1. AKO-14123 thermostat*

### 9.1.1. Overview

### 9.1.2. Set temperature

The factory SET POINT default value is 0 °C.
- Press ◒ key for at least 5 seconds to DISPLAY SET POINT. It displays the CURRENT SET POINT value and LED "**2**" start flashing.
- Press ◒ or ◓ keys for CHANGE SET POINT to the required value.
- Press ◒ + ◓ keys simultaneously to ACCEPT THE NEW SET POINT. The display returns to the CURRENT TEMPERATURE display status and the LED "**2**" stop flashing.

When **PA** appears in display, PASSWORD programmed in L5 parameter should be enter for accede to the CURRENT SET POINT.
- Press ◒ + ◓ keys simultaneously. **0** will be displayed to ENTER PASSWORD.
- Press ◒ or ◓ keys to CHANGE NUMBER and DISPLAY PASSWORD.
- Press ◒ + ◓ keys simultaneously to ACCEPT PASSWORD. The CURRENT SET POINT value will be displayed and possible to be modified.




### 9.1.3. Technical Details

Temperature range: . . . . . (-59°F to 99°F) -50 °C to 99 °C
Resolution, Set Point and differential: . . . . . 1 °C
Input for NTC probe: . . . . . **AKO-149XX**
Thermometric accuracy: . . . . . ± 1 °C
Probe tolerance at 25 °C: . . . . . ± 0,4 °C
Maximum input power: . . . . . 3 VA
Working ambient temperature: . . . . . 5 °C to 50 °C
Storage ambient temperature: . . . . . -30 °C to 70 °C

Control device classification: Independent mounting, with characteristic of automatic operation action Type 1.B, to be used in clean situation, logical medium (software) class A.

Double insulation between the power supply, the secondary circuit and the relay output.

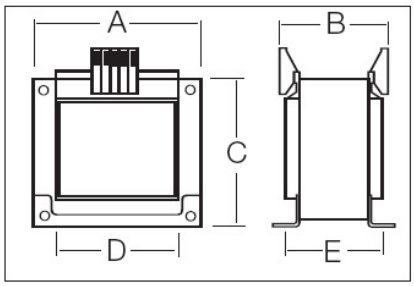
## 9.2. Inlec transformer

### 9.2.1. Overview

# control panel transformers

- Conforms to EN60742, IEC742, IEC61558
- Double wound with earth screen between windings
- Frequency range 50/60 Hz
- Terminal block connection
- Good access to fixing flanges
- Continuous duty
- Full varnish impregnation for silent running

| voltages | | | VA rating part no. | A | B | C | D | E | % reg | inrush VA for 10% drop | weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Primary | 0 - 220 - 230 - 240 | U | CL50 | 76 | 70 | 86 | 53 | 47 | 9 | 105 | 1.1 |
| | 0 - 380 - 400 - 415 | N | CL75 | 76 | 76 | 86 | 53 | 53 | 8.8 | 160 | 1.5 |
| Secondary | 0 - 12 | J | CL100 | 84 | 78 | 95 | 60 | 68 | 6.7 | 250 | 2.2 |
| | 0 - 24 | B | CL150 | 96 | 76 | 102 | 68 | 63 | 6.7 | 375 | 3.2 |
| | 0 - 48 | E | CL200 | 96 | 86 | 102 | 68 | 73 | 5.8 | 550 | 4.0 |
| | 0 - 110 | F | CL250 | 96 | 101 | 102 | 68 | 88 | 5.3 | 720 | 5.0 |
| | 0 - 230 | U | CL300 | 120 | 88 | 122 | 80 | 71 | 5.3 | 870 | 6.0 |
| | | | CL500 | 120 | 120 | 122 | 80 | 103 | 4.1 | 1700 | 7.5 |
| | | | CL750 | 150 | 135 | 140 | 105 | 70 | 5.2 | 2200 | 10.0 |
| | | | CL1000 | 150 | 161 | 140 | 105 | 96 | 3.3 | 4000 | 13.0 |
| | | | CL1500 | 150 | 188 | 140 | 105 | 123 | 3.2 | 6200 | 16.0 |
| | | | CL2000 | 175 | 150 | 165 | 153 | 125 | 3.3 | 8060 | 18.0 |
| | | | CL2500 | 175 | 178 | 165 | 153 | 158 | 2.6 | 12100 | 20.0 |

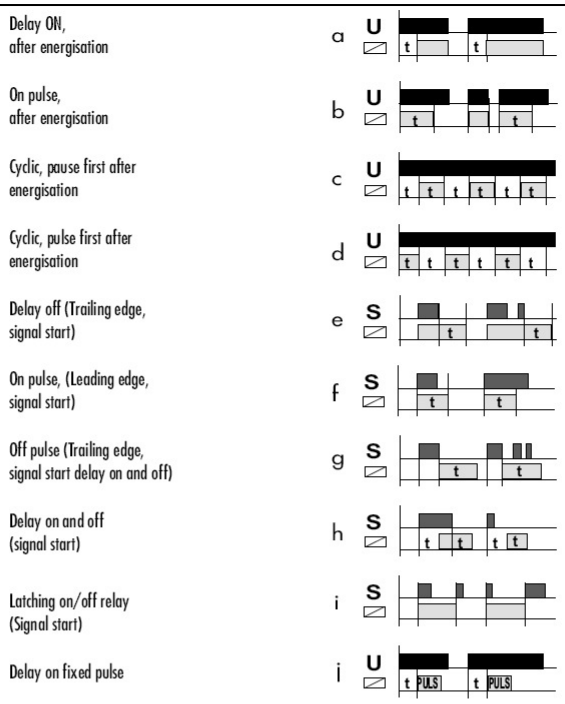


## 9.3. SCL SMT-10 Multifunction time relay

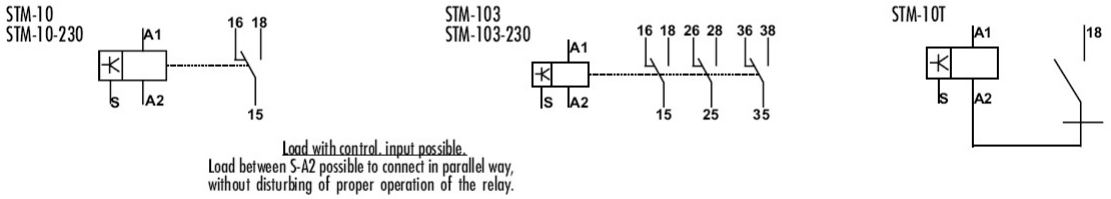
- STM-10, STM-10-230, STM-103, STM-103-230: Universal supply voltage AC/DC 12 - 240 V or AC 230 V
- STM-10T: Universal supply voltage AC 12 - 240 V
- 10 functions:
  - 5 time functions controlled by supply voltage
  - 4 time functions controlled by control input
  - 1 function of memory (latching) relay
- Time scale 0.1 s - 10 days devided into 10 ranges
- Output contact:
  STM-10, STM-10-230: 1x changeover 16 A
  STM-103, STM-103-230: 3x changeover 8 A
  STM-10T: 1x static output 0.7 A (60A/>10ms) switches potencial A1
- Output indication: multifunction red LED, flashing at certain states
- 1-MODULE, DIN rail mounting

| Technical parameters | | STM-10, STM-10-230 | STM-103, STM-103-230 | STM-10T |
|---|---|---|---|---|
| Number of functions: | | 10 | | |
| Supply terminals: | | A1 - A2 | | |
| Supply voltage: | UNI | AC/DC 12 - 240 V (AC 50 - 60 Hz) | AC/DC 12 - 240 V (AC 50 - 60 Hz) | AC 12 - 240 V (50 - 60 Hz) |
| Consumption: | UNI | AC 0.7 - 3 VA / DC 0.5 - 1.7 W | AC 0.7 - 3 VA / DC 0.5 - 1.7 W | AC max. 0.35 VA |
| Supply voltage: | 230 | AC 230 V / 50 - 60 Hz | AC 230 V / 50 - 60 Hz | ✘ |
| Consumption: | 230 | AC max. 12 VA / 1.3 W | AC max. 12 VA / 1.9 W | ✘ |
| Supply voltage tolerance: | | -15 %; +10 % | | |
| Supply indication: | | green LED | | |
| Time ranges: | | 0.1 s - 10 days | | |
| Time setting: | | rotary switch | | |
| Time deviation: | | 5 % - mechanical setting | | |
| Repeat accuracy: | | 0.2 % - set value stability | | |
| Temperature coefficient: | | 0.01 % / °C, at = 20 °C | | |
| Output | | | | |
| Changeover contacts: | | 1, (AgNi) | 3, (AgNi) | 1 static output (triac) |
| Rated current: | | 16 A / AC1 | 8 A / AC1 | 0.7 A |
| Breaking capacity: | | 4000 VA / AC1, 384 W / DC | 2000 VA / AC1, 192 W / DC | ✘ |
| Inrush current: | | 30 A / <3 s | 10 A / <3 s | 60 A / <10 ms |
| Switching voltage: | | 250 V AC1 / 24 V DC | 250 V AC1 / 24 V DC | ✘ |
| Min. breaking capacity DC: | | 500 mW | 500 mW | ✘ |
| Voltage drop on switch: | | ✘ | ✘ | max. 0.9 V at I max. |
| Load on B1 terminal: | | ✘ | ✘ | Yes / I max. 0.7 A |
| Output indication: | | multifunction red LED | | |
| Mechanical life: | | $3x10^7$ | $3x10^7$ | $>10^8$ |
| Electrical life (AC1): | | $0.7x10^5$ | $0.7x10^5$ | $>10^8$ |
| Controlling | | | | |
| Power on control input: | | AC 0.025 - 0.2 VA / DC 0.1 - 0.7 W (UNI), AC 0.53 VA (AC 230 V), AC 0.025 - 0.2 VA (AC 12 - 240 V) | | |
| Load between S-A2: | | YES (UNI, AC 230 V, AC 12 - 240 V) | | |
| Glow-tubes: | | NO (UNI), YES (AC 230 V), NO (AC 12 - 240 V) | | |
| Control. terminals: | | A1-S | | |
| Impulse length: | | min. 25 ms / max. unlimited | | |
| Reset time: | | max. 150 ms | max. 150 ms | max. 250 ms |
| Other information | | | | |
| Operating temperature: | | -20 .. +55 °C | | |
| Storage temperature: | | -30 .. +70 °C | | |
| Electrical strength: | | 4 kV (supply - output) | 4 kV (supply - output) | ✘ |
| Operating position: | | any | | |
| Mounting/DIN rail: | | DIN rail EN 60715 | | |
| Protection degree: | | IP 40 | | |
| Overvoltage cathegory: | | III. | | |
| Pollution degree: | | 2 | | |
| Max. cable size: | | max. 2.5 $mm^2$ / with cavern 1.5 $mm^2$ | | |
| Dimensions: | | 90 x 17.6 x 64 mm, see page 41-43 | | |
| Weight: | | UNI - 69 g, 230 - 59 g | UNI - 89 g, 230 - 88 g | 52 g |
| Standards: | | EN 61812-1, EN 61010-1 | | |

## Functions

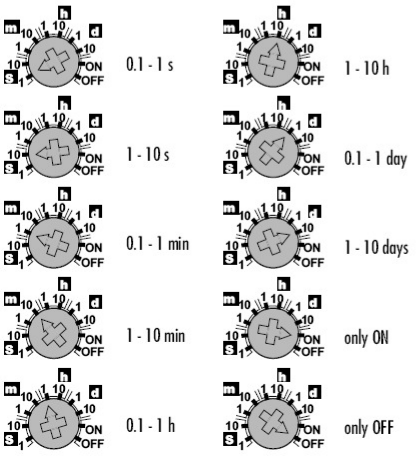



## Connection

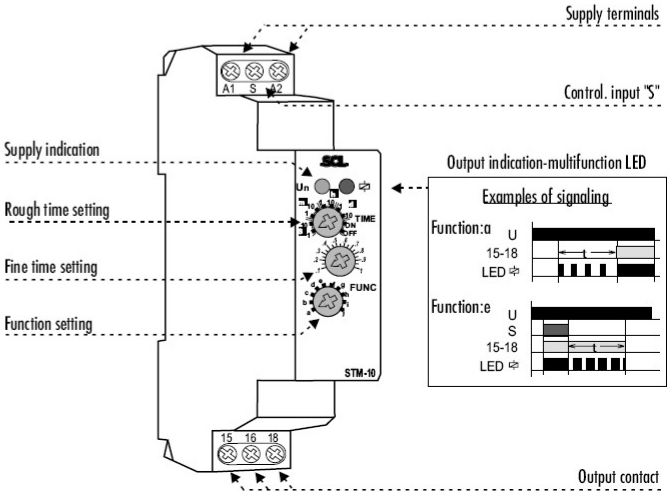



Load with control. input possible.
Load between S-A2 possible to connect in parallel way, without disturbing of proper operation of the relay.

## Time ranges



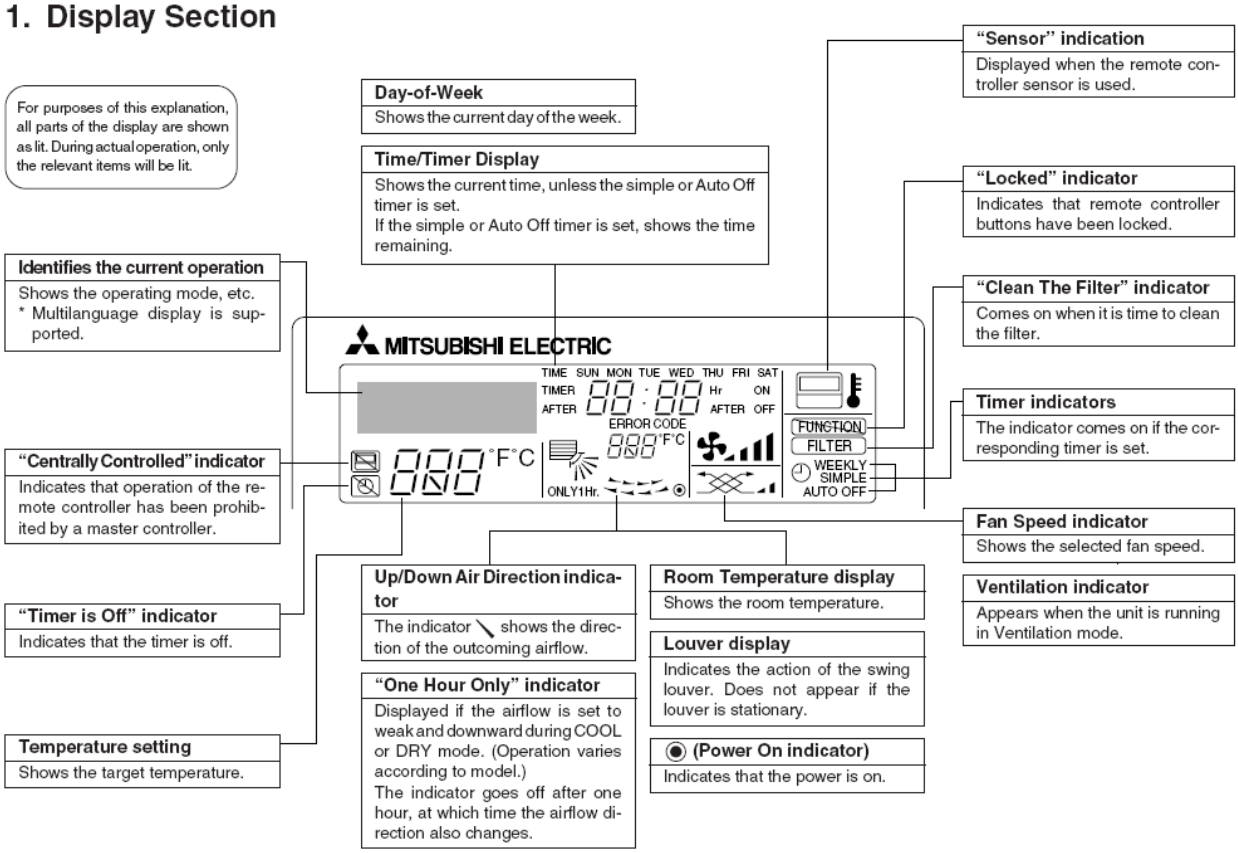

## Description



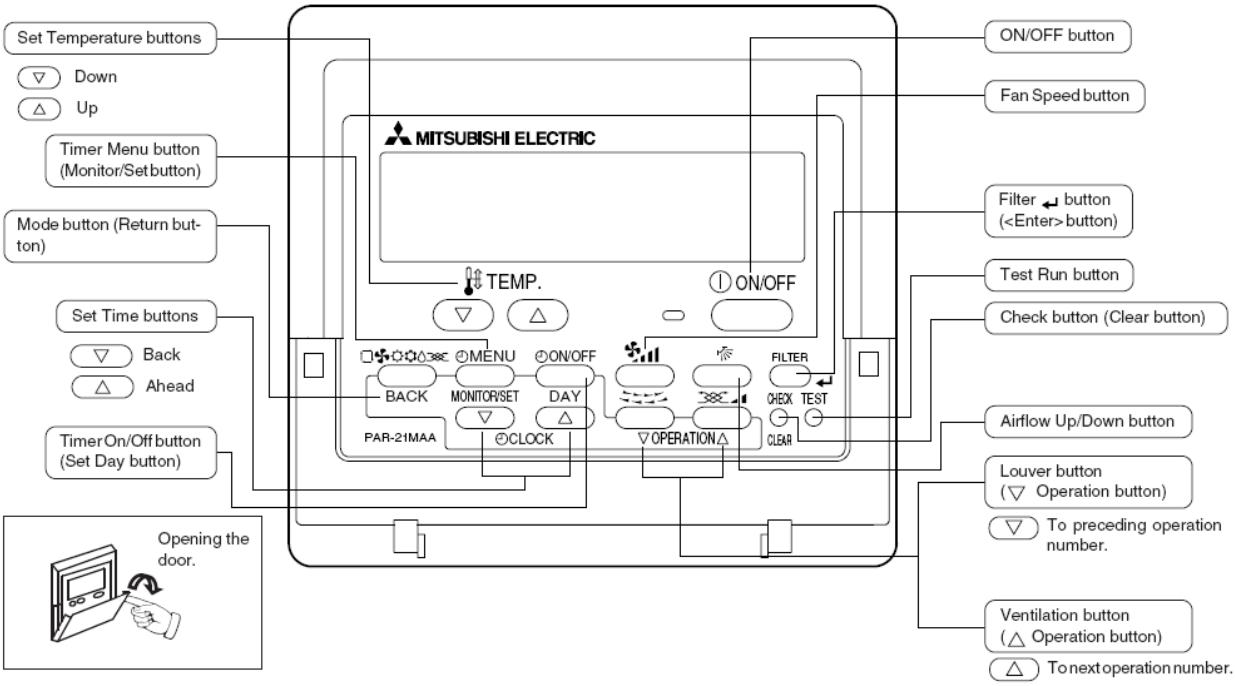
## *9.4. Mitsubishi Electric PAR-21MAA remote controller*

### 9.4.1. Overview

# 1. Display Section




# 2. Operation Section



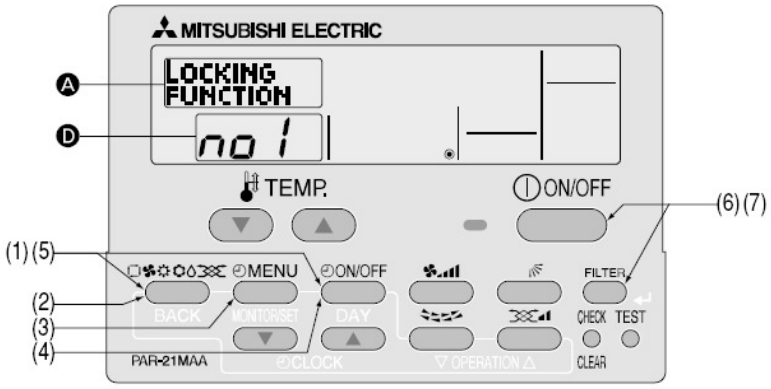
### 9.4.2. Lock the buttons

The following settings can be made.
① no1 : All buttons except for the [ON/OFF] button are locked.
② no2 : All buttons are locked.
③ OFF (default): No buttons are locked.

* To activate this operation lock function on the normal screen, hold down the ⏻ ON/OFF button for two seconds while holding down the FILTER (↵) button.

How to Lock the Buttons

■ Display example




(1) While pressing the MODE button, press the ON/OFF button for two seconds to activate the remote controller's function selection mode.

(2) Press the MODE button to select FUNCTION SELECTION on the screen (at Ⓐ).

[Display Ⓐ] → CHANGE LANGUAGE → [FUNCTION SELECTION] → MODE SELECTION → DISP MODE SETTING →

(3) Press the MENU button until "LOCKING FUNCTION" appears on the screen (at Ⓐ).

[Display Ⓐ] → [LOCKING FUNCTION] → SELECT AUTO MODE → LIMIT TEMP FUNCTION* →

* Displays the mode that is set in "Temperature Range Limit Setting".

(4) Press the ON/OFF button until the desired lock mode appears on the screen (at Ⓓ).

[Display Ⓓ] → No limitation (off) → Lock All Except ON/OFF (no1) → Lock All Buttons (no2) →

(5) While pressing the MODE button, press the ON/OFF button for two seconds to return to normal mode. Setting is now complete.

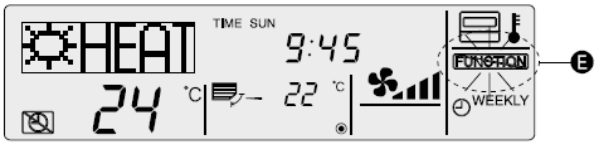
Completing steps (1) to (5) allows use of the operation lock function.
To enable the lock function, carry out the following steps.

### Enabling the Lock Function

(6) While pressing the FILTER (↵) button, press the ⏻ ON/OFF button for two seconds to enable the operation lock function. FUNCTION appears on the screen (at Ⓔ).

* If a locked button is pressed while the operation lock function is in use, FUNCTION will flash on the screen (at Ⓔ).

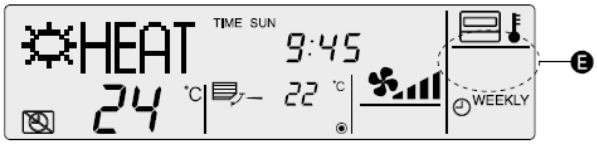
■ Display example when operation lock function is in use




### How to Unlock the Buttons

(7) While pressing the FILTER (↵) button, press the ⏻ ON/OFF button for two seconds. FUNCTION disappears from the screen (at Ⓔ).

■ Display example when the operation lock function is not in use




#### 9.4.3. Error codes

Control Error Codes (E)

| Displayed on remote controller | Outdoor control board | | Error details | Non INV | Power INV | Location of error | Location of inspection |
|---|---|---|---|---|---|---|---|
| | LED1 "Green" | LED2 "Red" | | | | | |
| E0 | Flashes 2 times | Flashes 3 times | Remote controller transmission error | ● | ● | Remote controller | ① If two remote controllers are used, check whether they are set as the main and sub controllers. |
| E3 | | | Remote controller transmission error | ● | ● | | |
| E4 | | | Remote controller transmission error | ● | ● | Indoor | ② Check if the specified 2-core cable is used. (0.3 to 1.25 mm²) Cable with 3 or more cores is not acceptable. |
| E5 | | | Remote controller transmission error | ● | ● | | |
| E6 | | Flashes 2 times | Indoor/outdoor unit transmission error | ● | ● | | Check if the cables connecting the indoor and outdoor units are connected firmly and correctly. |
| E7 | | | Indoor/outdoor unit transmission error | ● | ● | | |
| E8 | | | Indoor/outdoor unit transmission error | ● | ● | Outdoor | ② Check if 3-core VVF-type power cable is used. (In the case of superimposed power supply system) |
| E9 | | | Indoor/outdoor unit transmission error | ● | ● | | |
| EA | | Flash 1 time | Mis-wiring of indoor/outdoor units | ● | ● | | ③ Check if indoor/outdoor unit connecting cables are exposed to rain. |
| Eb | | | Mis-wiring of indoor/outdoor units (Incorrect connection, disconnection) | ● | ● | | ④ Check if indoor/outdoor unit connecting cables are extended using extension cable. ⑤ Check if fuse on outdoor control board is blown. |
| EC | | | "Startup" time over | ● | ● | | ⑥ Check if connectors are connected firmly. |
| EE | | Flashes 4 times | Combination error | ● | ● | Indoor Outdoor | ① Check combination of indoor and outdoor units. |
| EF | | | Undefined error (No corresponding M-NET error code) | ● | ● | | ① Check M-NET remote controller and central control system for abnormality. |
| Ed | | Flashes 5 times | Transmission error between M-NET adapters | ● | ● | | ① Check for disconnected connectors between indoor control board and M-NET board. |
| E1 | — | — | Remote controller control board error | ● | ● | Remote controller | ① Replace the remote controller |
| E2 | | | | | | | |

## A-Control Error Codes (F/P)

| Displayed on remote controller | Outdoor control board | | Error details | Non INV | Power INV | Location of error | Location of inspection |
|---|---|---|---|---|---|---|---|
| | LED1 "Green" | LED2 "Red" | | | | | |
| F1 | Flash 1 time | Flash 1 time | Reverse phase detected / power and indoor-outdoor incorrect connection | — | — | Outdoor | ① Power cable and indoor-outdoor cable are misconnected.<br>② Reverse phase → Replace R-phase with T-phase (outdoor power terminals).<br>③ Check if all three phases show the same power voltage. |
| F2 | | | Detection of loss of power line phase (when no T-phase) | — | — | | ① Loose connection of T-phase on outdoor unit power terminal block<br>② Check if all three phases show the same power voltage. |
| F3 | | Flashes 2 times | Connector (63L) open | ● | ● | | ① Outdoor control board connector (63L) disconnected<br>② Low-pressure switch (63L) disconnected |
| F5 | | | Connector (63H) open | ● | ● | | ① Outdoor control board connector (63H) disconnected<br>② High-pressure switch (63H) disconnected |
| F9 | | | 2 or more connectors open | ● | ● | | ① Check outdoor control board connector for disconnection and looseness. |
| F7 | | Flashes 3 times | Reverse-phase detecting circuit (board) error | — | — | | Replace outdoor control board. |
| F8 | | | Input circuit (board) error | ● | ● | | |
| Fb | Flashes 2 times | Flashes 4 times | Indoor control board error | ● | ● | Indoor | Replace indoor control board. |
| P1 | Flashes 4 times | Flash 1 time | Intake air sensor error | ● | ● | | ① Indoor control board connector (CN20) disconnected |
| P2 | | | Pipe (fluid pipe) sensor error | ● | ● | | ② Indoor control board connector (CN21) disconnected |
| P4 | | Flashes 2 times | Drain sensor error | ● | ● | | ③ Indoor control board connector (CN31) disconnected |
| P5 | | | Drain overflow protection activated, water leakage | ● | ● | | ① Check if drain pipe is tilted or clogged.<br>② Check if drain pan and drain sensor are dirty.<br>③ Indoor control board CNP connector disconnected |
| P6 | | Flashes 3 times | Anti-freeze protection (during cool mode)<br>Overheat protection (during heat mode) | ● | ● | | ① Dirty filter<br>② Gas leakage/insufficient gas<br>③ Check if air is blown from outdoor unit.<br>→ Check fan connector. |
| P8 | | Flashes 4 times | Abnormal pipe (fluid) temperature | ● | ● | | ① If two or more units are used, check indoor-outdoor connecting cable and pipe for incorrect connection.<br>② Gas leakage/insufficient gas |
| P9 | — | — | Pipe (two-phase pipe) sensor error | ● | ● | | ② Indoor control board connector (CN29) disconnected |

## A-Control Error Codes (U)

| Displayed on remote controller | Outdoor control board | | Error details | Non INV | Power INV | Location of error | Location of inspection |
|---|---|---|---|---|---|---|---|
| | LED1 "Green" | LED2 "Red" | | | | | |
| U2 | Flashes 3 times | Flash 1 time | Abnormal discharge temperature / 49C activated (inner thermostat)<br>Insufficient refrigerant | — | ● | Outdoor | ① Check filter for dirt → Clean if dirty.<br>② Gas leakage/insufficient gas<br>③ Check for indoor/outdoor short cycle. |
| U7 | | | Abnormality of low discharge superheat | — | ● | | ① Check if discharging thermistor is disconnected.<br>② Check electronic expansion valve for breakdown.<br>③ Check CNLEV connector on outdoor control board. |
| U1 | | Flashes 2 times | 63H activated due to abnormally high pressure | ● | ● | | ① Check if ball valve is open.<br>② Check for indoor/outdoor short cycle. |
| UE | | | 63H activated due to abnormally high pressure | ● | ● | | ① Check if ball valve is open.<br>② Check for indoor/outdoor short cycle.<br>③ Check if there is too much gas. |
| UL | | | 63L activated due to abnormally low pressure | ● | — | | ① Check if ball valve is open.<br>② Gas leakage/insufficient gas |
| Ud | | Flashes 3 times | Overheat protection (overloaded operation protection / fan error) | ● | — | | ① Check if outdoor unit's heat exchanger is dirty. → Clean if dirty.<br>② Check for indoor/outdoor short cycle. |
| U6 | | Flashes 4 times | Shutoff due to overcurrent in compressor (overload) | ● | ● | | ① Check if 12 hours or more have passed since crankcase heater was turned ON. |
| | | | Power module error | — | ● | | (Replace outdoor control board.) |
| UC | | | Compressor self-protection function activated | — | ● | | ① Check if ball valve is open. |
| UF | | | Compressor overcurrent (lock) | ● | ● | | ① Check if ball valve is open.<br>② Check if power capacity is sufficient. |
| UP | | | Shutoff due to overcurrent in compressor | ● | ● | | ① Check if ball valve is open.<br>② Check if power capacity is sufficient. |
| UH | | | Current sensor error | ● | ● | | ① If outdoor control board has been replaced:<br>Check wiring and board design. |
| U3 | | Flashes 5 times | Discharging thermistor (TH4) open/short-circuit | ● | ● | | ① Outdoor control board connector (TH4) disconnected |
| U4 | | | Pipe thermistor (TH3) open/short-circuit | ● | ● | | ① Outdoor control board connector (TH3/TH32) disconnected |
| | | | 2-phase pipe thermistor (TH6) open/short-circuit | — | ● | | ① Outdoor control board connector (TH6) disconnected |
| | | | Outside air temperature thermistor (TH7) open/short-circuit | — | ● | | ① Outdoor control board connector (TH7) disconnected |
| | | | Heat sink thermistor (TH8) open/short-circuit | — | ● | | ① Outdoor control board connector (TH8) disconnected |
| U5 | | Flashes 6 times | Abnormal heat sink temperature | — | ● | | ① Check if there are obstructions in intake/discharge ports of outdoor unit. |
| U6 | | Flashes 7 times | Abnormal voltage | — | ● | | ① Check power line for open phase.<br>② Check if power voltage is high enough. |

This product is designed and intended for use in the residential, commercial and light-industrial environment.

The product at hand is based on the following EU regulations:

• Low Voltage Directive 73/23/EEC

• Electromagnetic Compatibility Directive 89/336/EEC

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.


**MITSUBISHI ELECTRIC UK**

MITSUBISHI ELECTRIC UK, TRAVELLERS LANE, HATFIELD HERTFORDAHIRE, AL10 8XB