



## TECHNICAL & SERVICE MANUAL

### **R410A**

Outdoor unit

[Model Name]

[Service Ref.]

SUY-SA18VA

**SUY-SA18VA.TH-T**

SUY-SA24VA

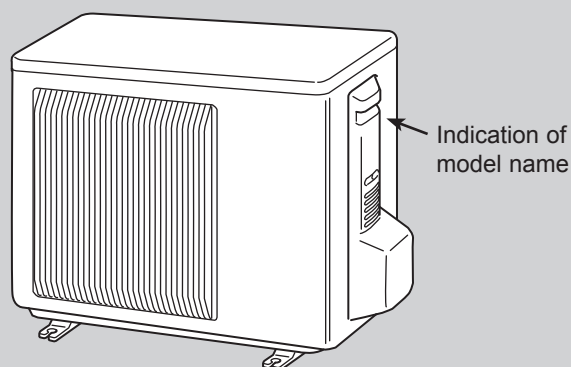
**SUY-SA24VA.TH-T**

SUY-SA30VA

**SUY-SA30VA.TH-T**

SUY-SA36VA

**SUY-SA36VA.TH-T**



**Mr. SLIM**

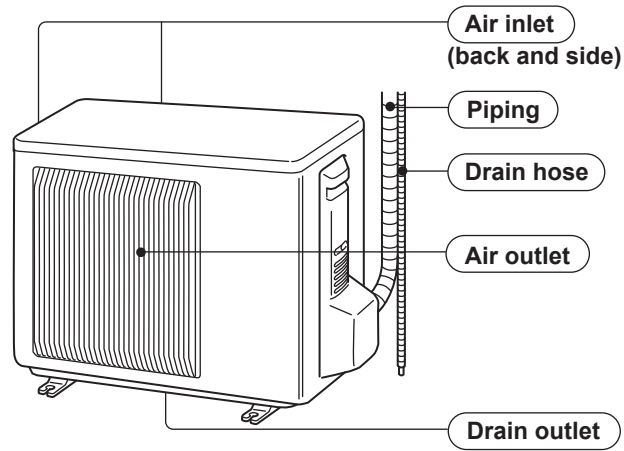
# REFERENCE MANUAL

## INDOOR UNIT SERVICE MANUAL

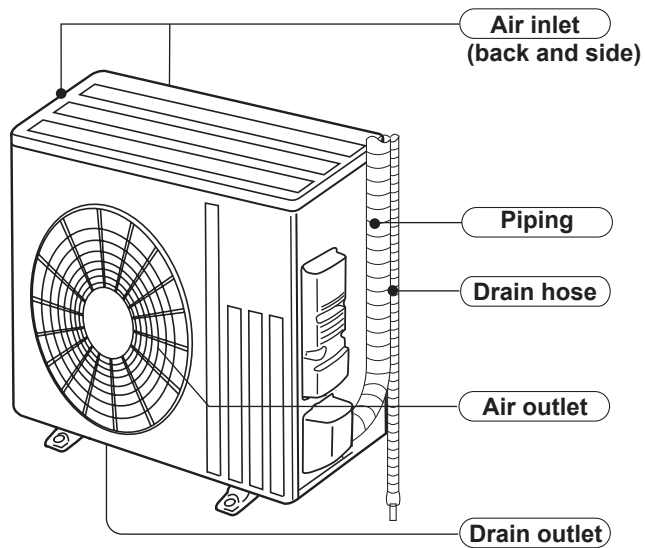
| Service Ref                 | Service Manual No. |
|-----------------------------|--------------------|
| PCY-SP18/24/30/36KAL.TH-T   |                    |
| PLY-SP18/24/30/36BA.TH-T    |                    |
| PEY-SP18/24/30/36JA(L).TH-T | —                  |

# PARTS NAMES AND FUNCTIONS

SUY-SA18VA.TH-T



SUY-SA24VA.TH-T  
SUY-SA30VA.TH-T  
SUY-SA36VA.TH-T



# SPECIFICATION

| Outdoor model                        |                           |         |         | SUY-SA18VA.TH-T         | SUY-SA24VA.TH-T | SUY-SA30VA.TH-T | SUY-SA36VA.TH-T |       |
|--------------------------------------|---------------------------|---------|---------|-------------------------|-----------------|-----------------|-----------------|-------|
| Power supply                         |                           |         |         | Single phase 50Hz, 220V |                 |                 |                 |       |
| Compressor                           | Output                    |         | W       | 900                     |                 | 1,200           |                 |       |
|                                      | Current*                  | Cooling | A       | 7.11                    | 8.94            | 11.74           | 12.16           |       |
|                                      | Refrigeration oil (Model) |         | L       | 0.35                    |                 | 0.4             |                 |       |
| Fan motor                            |                           |         |         |                         |                 |                 |                 |       |
|                                      | Current*                  | Cooling | A       | 0.39                    | 0.66            | 0.66            | 0.84            |       |
| Dimensions W × H × D                 |                           |         | mm      | 800 × 550 × 285         |                 | 840 × 880 × 330 |                 |       |
| Weight                               |                           |         | kg      | 32                      | 48              | 46              | 50              |       |
| Special remarks                      | Air flow*                 | Cooling | High    | m <sup>3</sup> /h       | 1,667           | 2,818           | 3,224           | 3,054 |
|                                      |                           |         | Med.    |                         | 1,667           | 2,818           | 2,818           | 2,641 |
|                                      |                           |         | Low     |                         | 740             | 993             | 993             | 565   |
|                                      | Sound level*              |         | Cooling | dB(A)                   | 47              | 52              | 54              | 54    |
|                                      | Fan speed                 | Cooling | High    | rpm                     | 810             | 840             | 950             |       |
|                                      |                           |         | Med.    |                         | 810             | 840             | 840             |       |
|                                      |                           |         | Low     |                         | 490             | 480             | 450             |       |
| Fan speed regulator                  |                           |         |         | 3                       |                 |                 |                 |       |
| Refrigerant filling capacity (R410A) |                           |         | kg      | 1.2                     | 2.0             | 2.1             | 2.5             |       |

NOTE: Test conditions are based on ISO 5151

Cooling : Indoor D.B. 27°C W.B. 19°C

Outdoor D.B. 35°C

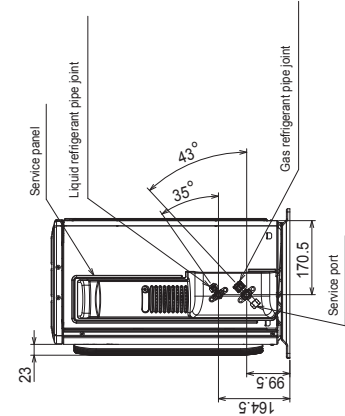
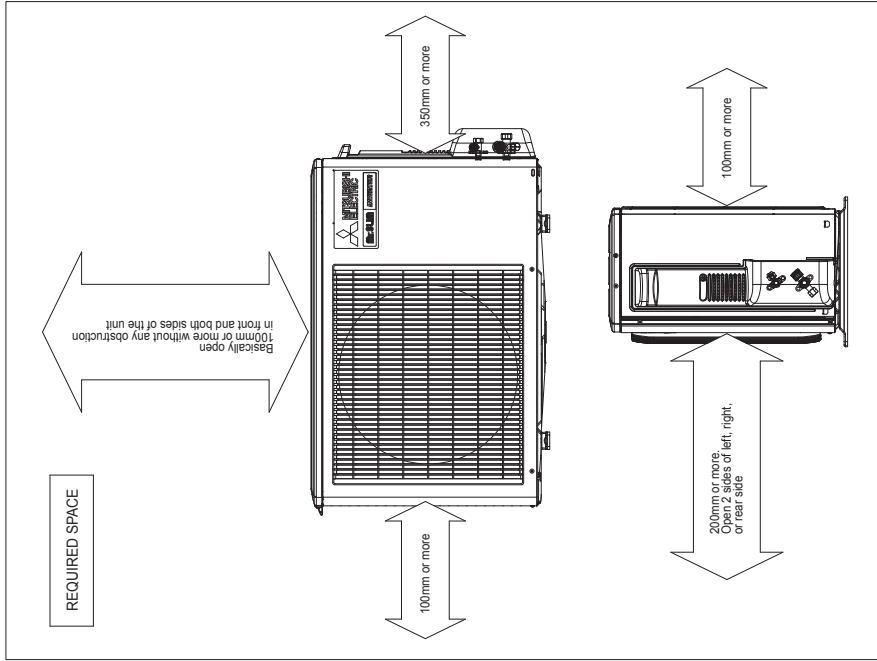
Refrigerant piping length (one way): 7.5 m

\*Measured under rated operating frequency.

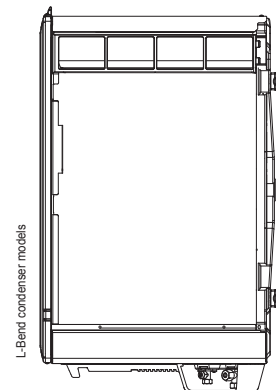
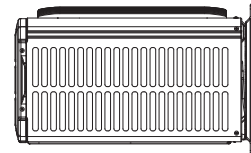
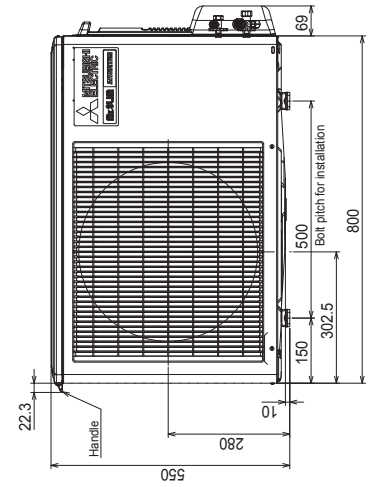
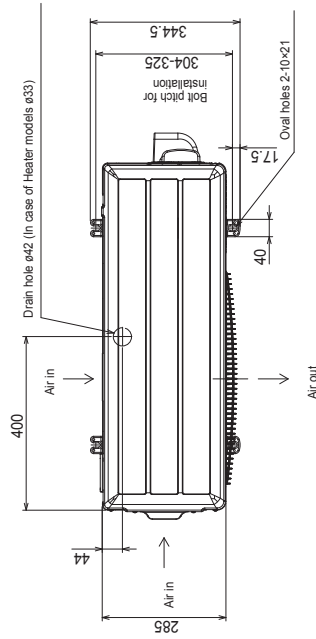
# OUTLINES AND DIMENSIONS

SUY-SA18VA.TH-T

Unit: mm



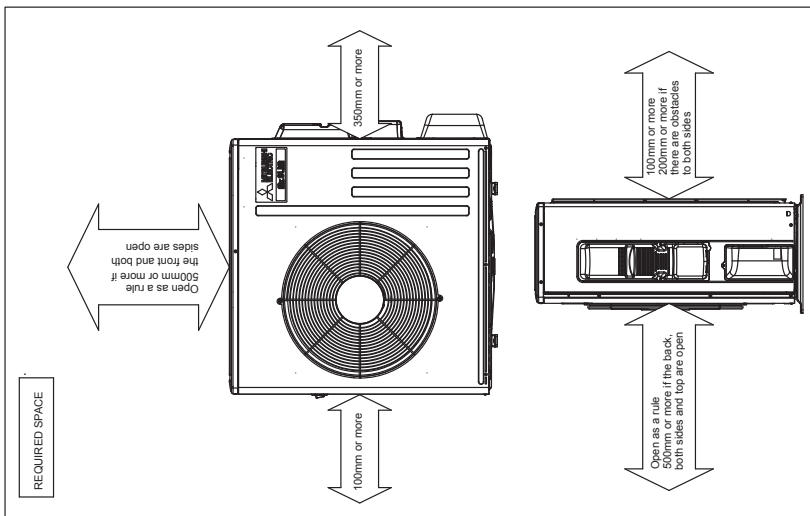
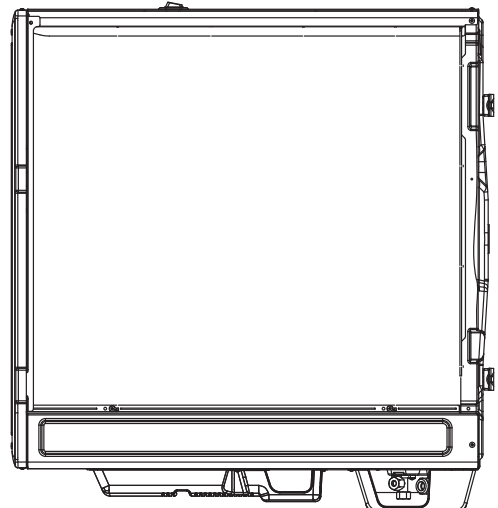
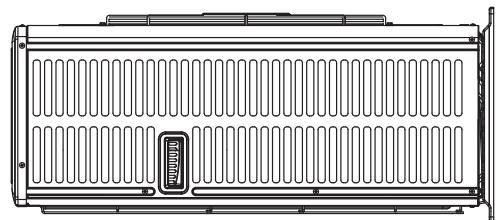
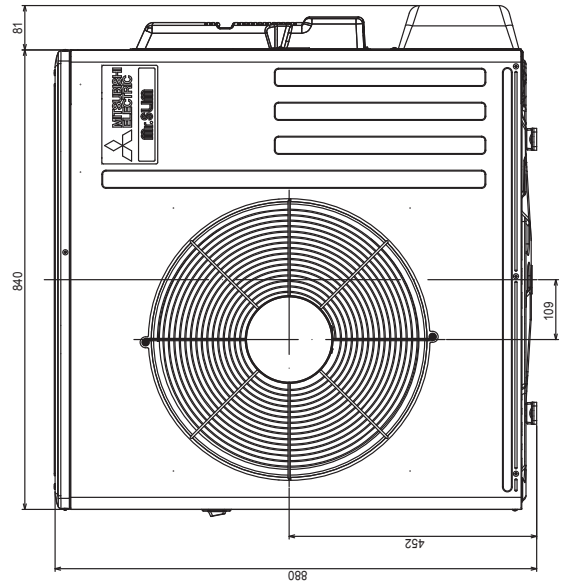
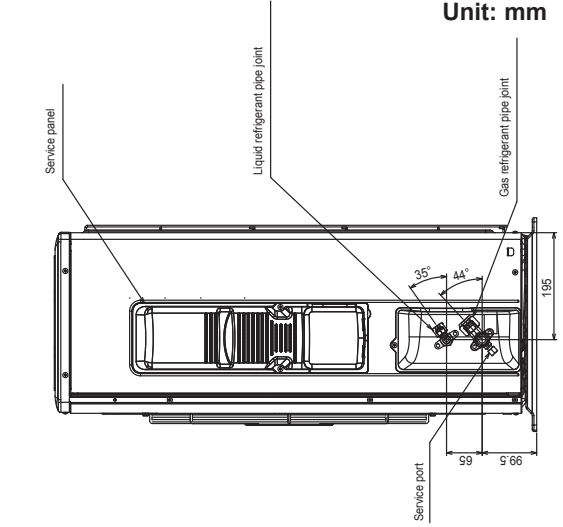
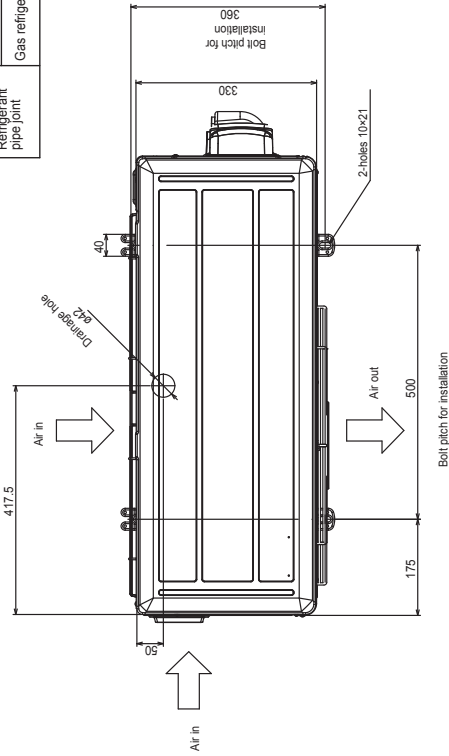
|                        |                         |                       |
|------------------------|-------------------------|-----------------------|
| Model name             | SUY-SA18VA.TH-T         |                       |
|                        | Liquid refrigerant pipe | Flared 6.35(1/4 inch) |
| Refrigerant pipe joint | Gas refrigerant pipe    | Flared 12.7(1/2 inch) |



**SUY-SA24VA.TH-T**  
**SUY-SA30VA.TH-T**  
**SUY-SA36VA.TH-T**

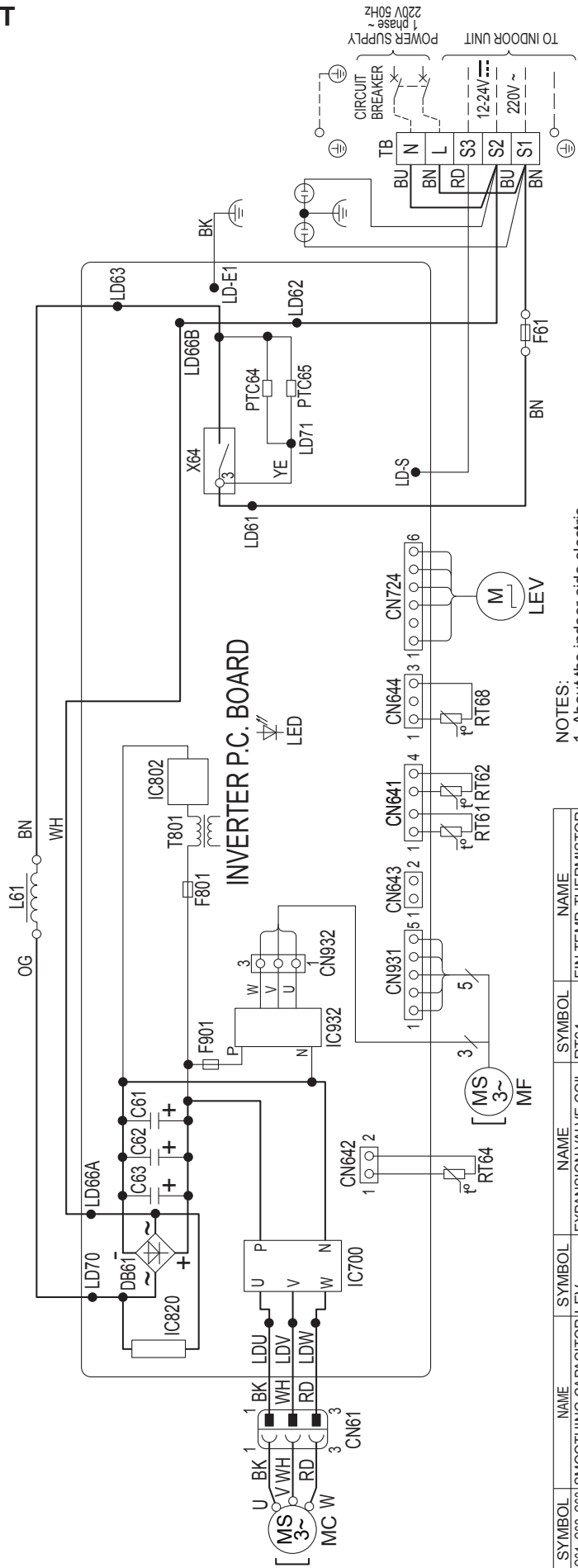
Unit: mm

|                         |   |
|-------------------------|---|
| Model name              | SUY-SA24VA.TH-T<br>SUY-SA30VA.TH-T<br>SUY-SA36VA.TH-T |
|                         | Refrigerant pipe joint                                |
| Liquid refrigerant pipe | Flared 9.52(3/8 inch)                                 |
| Gas refrigerant pipe    | Flared 15.88(5/8 inch)                                |



# WIRING DIAGRAM

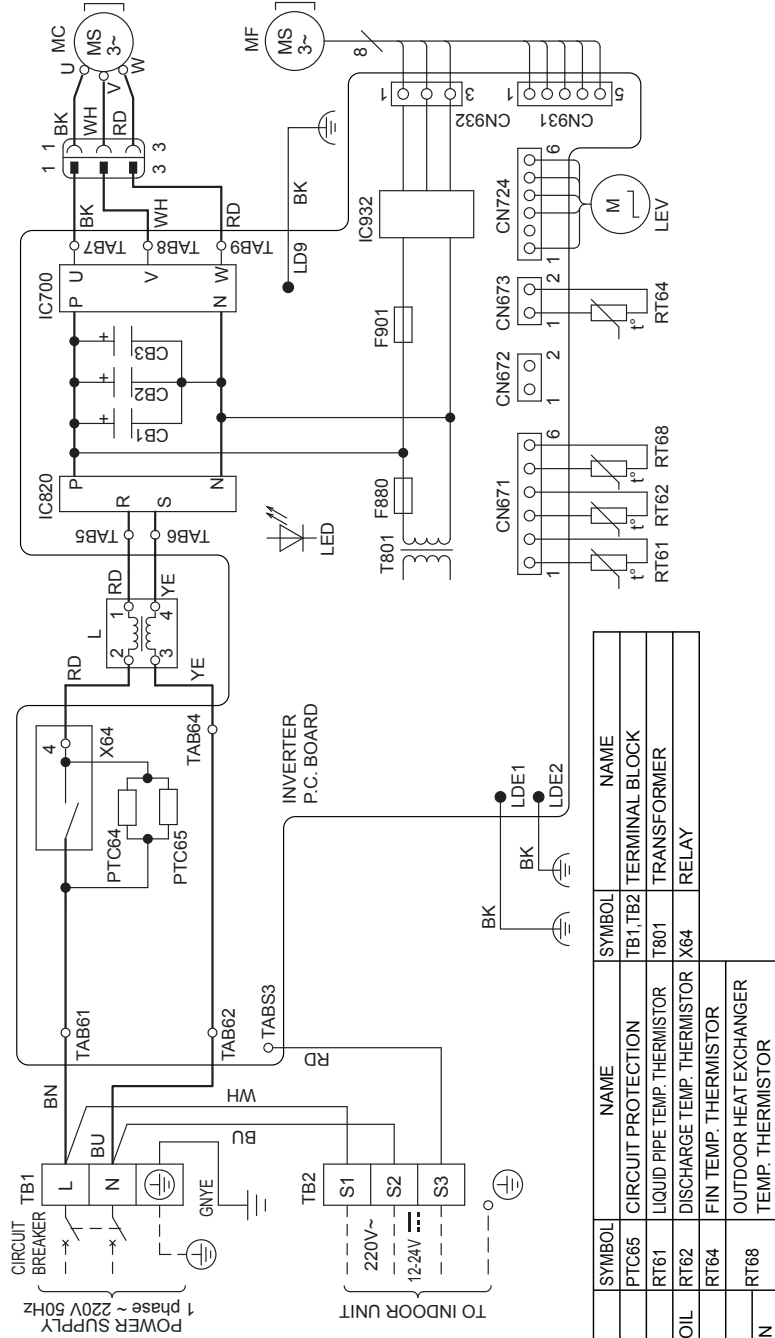
SUY-SA18VA.TH-T  
SUY-SA24VA.TH-T



NOTES:  
1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.

| SYMBOL              | NAME                | SYMBOL       | NAME                         | SYMBOL | NAME                                    |
|---------------------|---------------------|--------------|------------------------------|--------|---|
| C61, C62, C63       | SMOOTHING CAPACITOR | RT64         | EXPANSION VALVE COIL         | RT64   | FIN TEMP. THERMISTOR                    |
| DB61                | DIODE MODULE        | L61          | REACTOR                      | RT68   | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| F61                 | FUSE (T20AL/250V)   | MC           | COMPRESSOR                   | TB     | TERMINAL BLOCK                          |
| F801, F901          | FUSE (T3-15AL/250V) | MF           | FAN MOTOR                    | T801   | CIRCUIT PROTECTION TRANSFORMER          |
| IC700, IC820, IC932 | POWER MODULE        | PTC64, PTC65 | CIRCUIT PROTECTION           | X64    | RELAY                                   |
| IC802               | POWER DEVICE        | RT61         | LIQUID PIPE TEMP. THERMISTOR |        |   |
| LED                 | LED                 | RT62         | DISCHARGE TEMP. THERMISTOR   |        |   |

SUY-SA30VA.TH-T  
SUY-SA36VA.TH-T



| SYMBOL | NAME                | SYMBOL | NAME                 | SYMBOL   | NAME           |
|--------|---------------------|--------|----------------------|----------|----------------|
| CB1-3  | SMOOTHING CAPACITOR | L      | REACTOR              | TB1, TB2 | TERMINAL BLOCK |
| F880   | FUSE (T3.15A/250V)  | LED    | LED                  | T801     | TRANSFORMER    |
| F901   | FUSE (T3.15A/250V)  | LEV    | EXPANSION VALVE COIL | X64      | RELAY          |
| IC700  | IGBT Module         | MC     | COMPRESSOR           |          |                |
| IC820  | DIODE Module        | MF     | FAN MOTOR            |          |                |
| IC932  | IGBT Module         | PTC64  | CIRCUIT PROTECTION   |          |                |

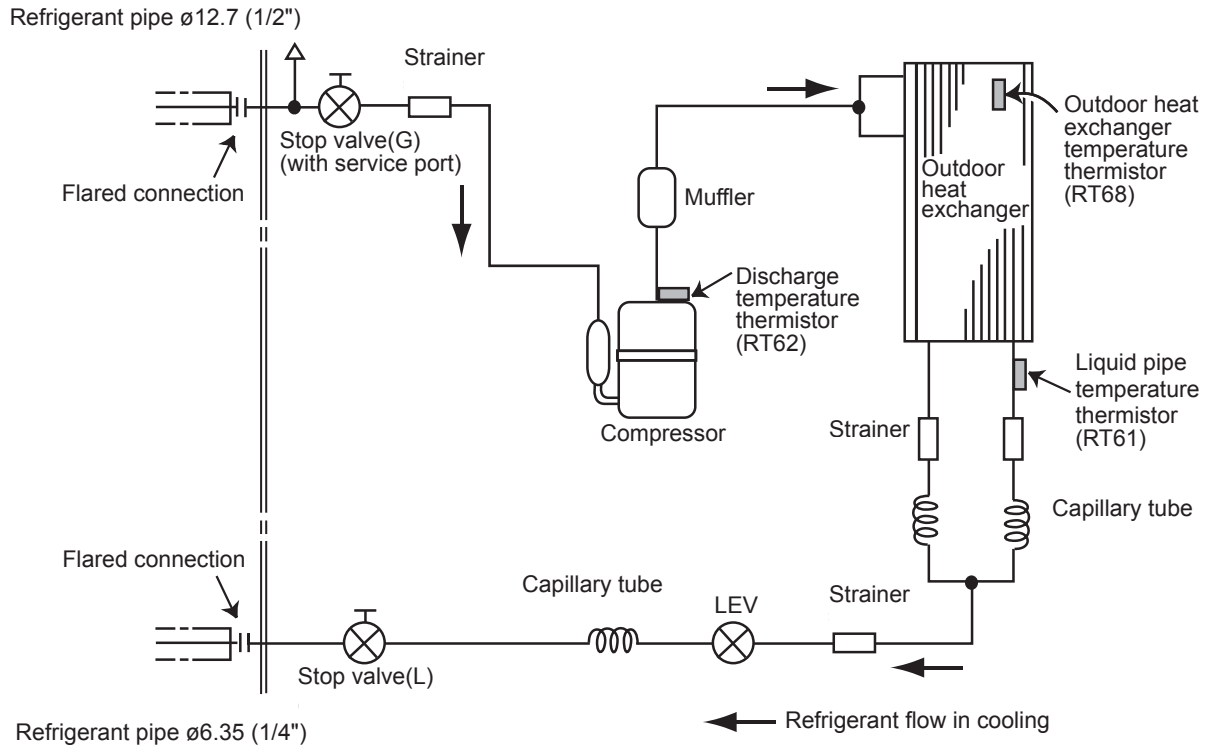
NOTE: About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.



# REFRIGERANT SYSTEM DIAGRAM

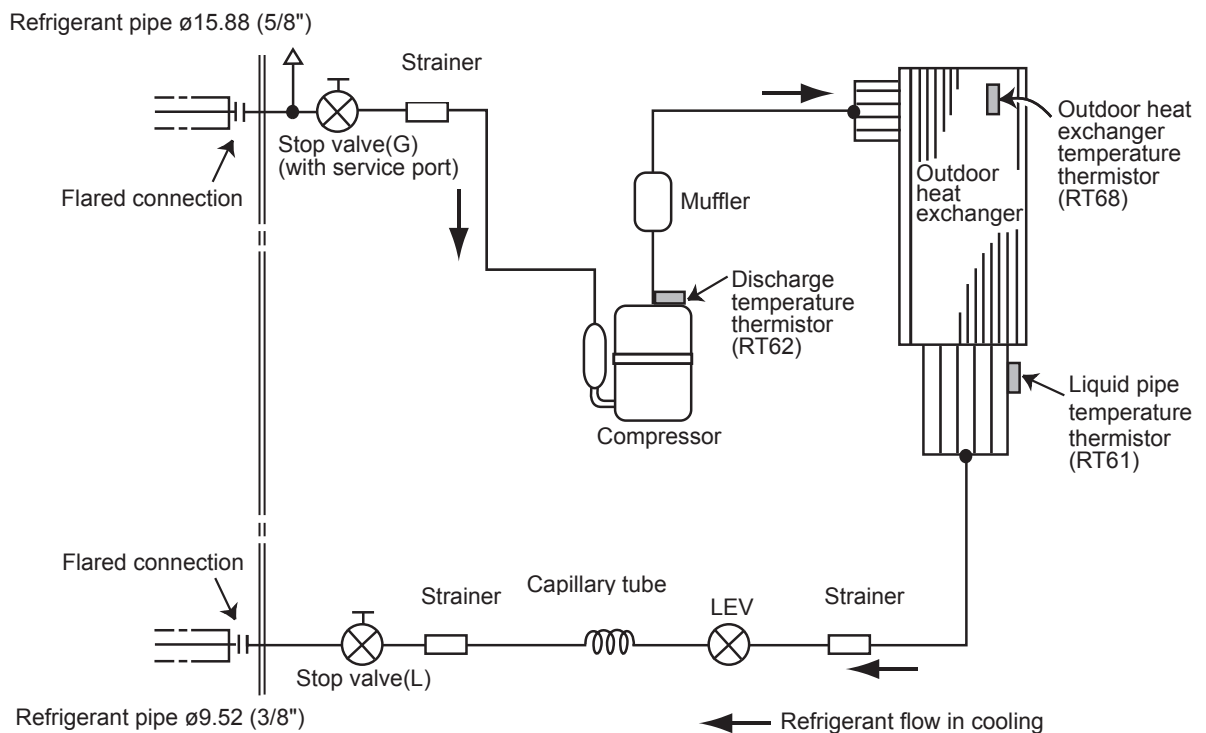
SUY-SA18VA.TH-T

Unit: mm



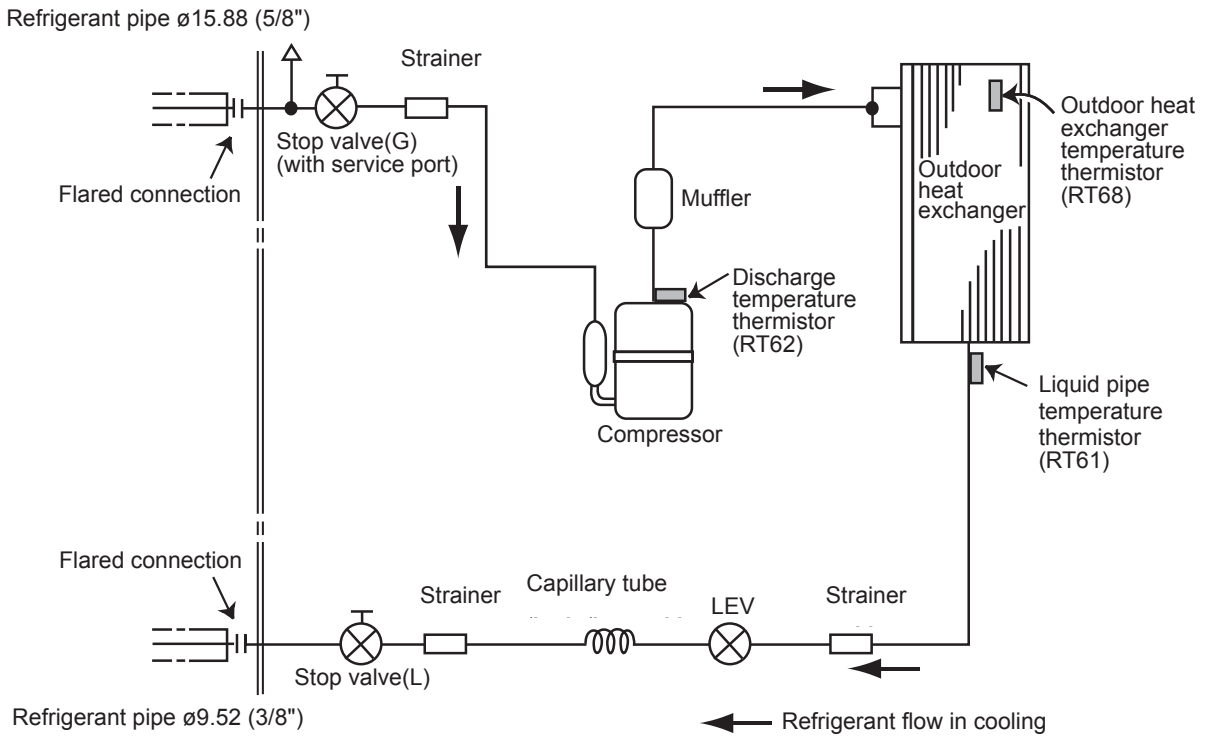
SUY-SA24VA.TH-T  
SUY-SA30VA.TH-T

Unit: mm



# SUY-SA36VA.TH-T

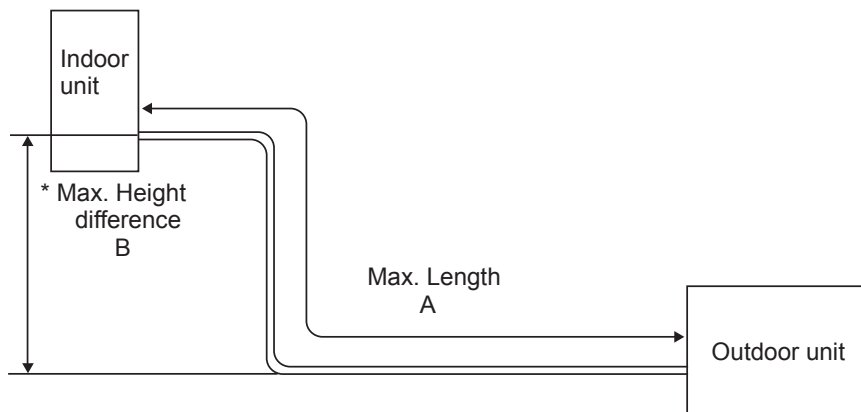
Unit: mm



## MAX. REFRIGERANT PIPING LENGTH

| Model           | Refrigerant piping: m |                          | Piping size O.D: mm |        |
|-----------------|-----------------------|--------------------------|---------------------|--------|
|                 | Max. Length A         | Max. Height difference B | Gas                 | Liquid |
| SUY-SA18VA.TH-T | 20                    | 12                       | 12.7                | 6.35   |
| SUY-SA24VA.TH-T | 30                    | 15                       | 15.88               | 9.52   |
| SUY-SA30VA.TH-T |                       |                          |                     |        |
| SUY-SA36VA.TH-T |                       |                          |                     |        |

## MAX. HEIGHT DIFFERENCE



\* Height difference limitations are binding regardless of which unit, indoor or outdoor, is position high.

## ADDITIONAL REFRIGERANT CHARGE (R410A: g)

| Model           | Outdoor unit precharged | Refrigerant piping length (one way) |    |    |     |     |     |     |     |     |     |
|-----------------|-------------------------|-------------------------------------|----|----|-----|-----|-----|-----|-----|-----|-----|
|                 |                         | 7m                                  | 8m | 9m | 10m | 11m | 12m | 13m | 14m | 15m | 20m |
| SUY-SA18VA.TH-T | 1,200                   | 0                                   | 15 | 30 | 45  | 60  | 75  | 90  | 105 | 120 | 195 |

Calculation:  $Xg=15g/m \times (\text{Refrigerant piping length}(m)-7)$

| Model           | Outdoor unit precharged | Refrigerant piping length (one way) |     |     |     |     |     |
|-----------------|-------------------------|-------------------------------------|-----|-----|-----|-----|-----|
|                 |                         | 7m                                  | 10m | 15m | 20m | 25m | 30m |
| SUY-SA24VA.TH-T | 2,000                   | 0                                   | 60  | 160 | 260 | 360 | 460 |
| SUY-SA30VA.TH-T | 2,100                   |                                     |     |     |     |     |     |
| SUY-SA36VA.TH-T | 2,500                   |                                     |     |     |     |     |     |

Calculation :  $Xg=20g/m \times (\text{Refrigerant piping length}(m)-7)$

# ACTUATOR CONTROL

SUY-SA18VA.TH-T  
SUY-SA30VA.TH-T

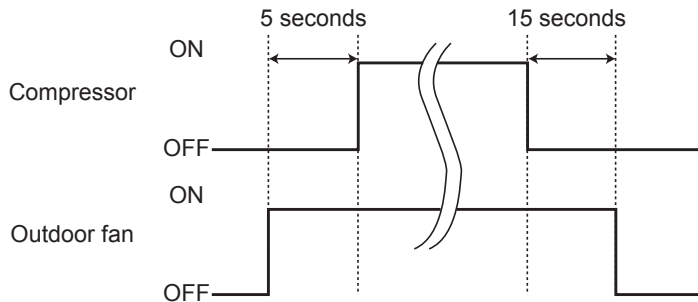
SUY-SA24VA.TH-T  
SUY-SA36VA.TH-T

## OUTDOOR FAN MOTOR CONTROL

The fan motor turns ON/OFF, interlocking with the compressor.

[ON] The fan motor turns ON 5 seconds before the compressor starts up.

[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



## RELATION BETWEEN MAIN SENSOR AND ACTUATOR

| Sensor  | Purpose                                    | Actuator   |     |                   |
|---|--|------------|-----|-------------------|
|   |  | Compressor | LEV | Outdoor fan motor |
| Discharge temperature thermistor              | Protection                                 | ○          | ○   |                   |
| Indoor coil temperature thermistor            | Cooling: Coil frost prevention             | ○          |     |                   |
| Liquid pipe temperature thermistor            | Protection                                 | ○          | ○   | ○                 |
| Fin temperature thermistor                    | Protection                                 | ○          |     | ○                 |
| Outdoor heat exchanger temperature thermistor | Cooling: Low ambient temperature operation | ○          | ○   | ○                 |
|   | Cooling: High pressure protection          | ○          | ○   | ○                 |