

**AIR CONDITIONER** Duct type

# **DESIGN & TECHNICAL MANUAL**

**INDOOR** 



FUJITSU GENERAL LIMITED

AR\*G60LHTA



AO\*G60LATT

OUTDOOR



# **1. INDOOR UNIT**

DUCT TYPE : AR\*G60LHTA

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## **1. INDOOR UNIT**

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## **1. FEATURES**





## **FEATURES**

#### • Energy saving technology (ALL DC)

DC fan motor



The power consumption has been reduced drastically by the introduction of DC fan motors.

#### Space saving

#### Compact size

High performance has been realized with a compact indoor unit. Due to the compact size of the indoor unit, the installation space required has been reduced allowing for a wider selection on installation locations.



### Control system

#### 1-Remote controller control

This is the most basic system.



#### 2-Remote controllers control

YPE

Control locally and from a remote point is possible using 2-remote controllers.



\* For 2-wired type remote controllers, specify a Primary and a Secondary remote controller.

\* The timer function of the remote controller specified the Secondary cannot be used.

# 2. WIRED REMOTE CONTROLLER

## ■ FEATURES

#### \_\_\_\_\_00000



- \* Various timer setup (ON / OFF / WEEKLY) are possible.
- Equipped with weekly timer as standard function.(2 times Start / Stop per day for a week)
- When setting up a timer, operation mode and a temperature setup can be changed.
- \* When a failure occurs, the error code is displayed. (Maximum of 16)
- \* Error indication.(A maximum of 16 error histories are memorizable.)
- \* Up to 16 indoor units can be simultaneously controlled.
- \* The room temperature can be controlled by being detected the temperature accurately with built-in thermo sensor.

#### Simple function setting

Setting of the air conditioner selection function is performed by remote controller.

#### High performance and compact size



#### Easy-to-understand operation



[Variable timer control]

The operation/display sections are zoned according to time and operation, enabling variable programming to match application.

#### Simple installation

Components are compatible with standard switch boxes. Flat back construction allows equipment to be installed wherever it is needed.





#### Display panel



## DIMENSION





| _*   |      |
|------|------|
| Side | View |

[ Unit : mm ] 18

## SPECIFICATION

| SIZE       | (H x W x D mm) | 120 x 120 x 18 |
|------------|----------------|----------------|
| WEIGHT     | (g)            | 160            |
| CABLE LENG | TH (m)         | 10             |
| POWER      | (V)            | 12             |

## WIRING SPECIFICATIONS

| 1 | STA | RT/S | тор | buttor | ı |
|---|-----|------|-----|--------|---|
|   | _   |      |     |        |   |

- Pressed to start and stop operation.
- 2 SET TEMP. button Selects the setting temperature.
- 3 MODE button Selects the operating mode (AUTO, HEAT, FAN, COOL, DRY).
- 4 FAN button Selects the fan speed (AUTO, LOW, MED, HIGH).
- 5 ECONOMY button Turns the economy efficient mode on and off.
- 6 TIMER MODE (CLOCK ADJUST) button Selects the timer mode (OFF TIMER, ON TIMER, WEEKLY TIMER). Set the current time.
- 7 DAY (DAY OFF) button Temporarily cancels of one day timer.
- 8 SET BACK button Pressed to select the set back timer.
- 9 Set time button Pressed to set time.
- 10 TIMER DELETE button The schedule of a weekly timer is deleted.
- 11 TIMER SET button Sets the date, hour, minute and on-off time.
- 12 Vertical airflow direction and swing button Push for two seconds to change the swing mode.
- 13 Horizontal airflow direction and swing button Push for two seconds to change the swing mode.
- 14 FILTER RESET button
- 15 Operation lamp
  - Lights during operation and when the timer is on.
- 16 Timer and clock display
- 17 Operation mode display
- 18 Fan speed display
- 19 Operation lock display
- 20 Temperature display
- 21 Function display
  - **\$**/0 Defrost display
    - Э Thermo sensor display
    - EC0 Economy display
    - $\mathbf{C}$ Vertical swing display
    - Horizontal swing display

▦ Filter display

Functions will be different due to type of indoor unit. For details, please see operation manual.

| Use               | Size                | Wire type    | Remarks                  |
|-------------------|---------------------|--------------|--------------------------|
| Remote controller | 0.33mm <sup>2</sup> | Polar 3 coro | Lise sheathed RVC cable  |
| cable             | (22AWG)             |              | Use sheathed F VC cable. |





## **3. SPECIFICATIONS**

| Тире                     |             |                       |      |   | DUCTED MODEL                 |  |  |
|--------------------------|-------------|-----------------------|------|---|------------------------------|--|--|
| туре                     |             |                       |      |   | INVERTER HEATPUMP            |  |  |
| Model name               |             |                       |      |   | AR*G60LHTA                   |  |  |
| Power source             |             |                       |      |   | 230V 50Hz                    |  |  |
| Available voltage range  | r           |                       | r    |   | 198 - 264V 50Hz              |  |  |
|                          |             | Rated                 |      | kW                                      | 15.0                         |  |  |
|                          | Cooling     |                       |      | Btu/h                                   | 51,200                       |  |  |
|                          |             | Min - Max.            |      | kW                                      | 6.2-17.5                     |  |  |
| Capacity                 |             |                       |      | Btu/h                                   | 21,200-60,000                |  |  |
|                          |             | Rated                 |      | kW                                      | 18.0                         |  |  |
|                          | Heating     |                       |      | Btu/h                                   | 61,500                       |  |  |
|                          | -           | Min - Max.            |      | KVV                                     | 6.2-20.0                     |  |  |
|                          |             | Datad                 |      | Btu/n                                   | 21,200-08,300                |  |  |
|                          | Cooling     | Max                   |      |   | 4.70                         |  |  |
| Input power              |             | Rated                 |      | kW                                      | 515                          |  |  |
|                          | Heating     | Max                   |      |   | 715                          |  |  |
|                          | Cooling     | IVIdA                 |      |   | 69                           |  |  |
| Current                  | Heating     | Rated                 |      | Α                                       | 76                           |  |  |
| FFR                      | Incoding    | Cooling               |      |   | 3 19                         |  |  |
| COP                      | 0           | Heating               |      | kW/kW                                   | 3.50                         |  |  |
|                          | 0           | [·········]           |      | l/h                                     | 2.0 (2.5)                    |  |  |
| Moisture removal         |             |                       | (    | (pints/h)                               | 2.0 (3.5)                    |  |  |
| Maximum operating currer | nt *        | Cooling               |      | А                                       | 12.5                         |  |  |
|                          | ,           | Heating               |      | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | 12.5                         |  |  |
|                          |             |                       | High |   | 3,550                        |  |  |
|                          |             | Cooling               | Med  |   | 3,000                        |  |  |
|                          | Air flow    |                       | Low  | m³/h                                    | 2,450                        |  |  |
| Fan                      | rate        |                       | High |   | 3,550                        |  |  |
|                          |             | Heating               | Med  |   | 3,000                        |  |  |
| T                        |             |                       | Low  |   | 2,450                        |  |  |
|                          | Type × Q ty | /                     |      | 14/                                     |                              |  |  |
| Recommended static pres  |             |                       |      | Pa                                      | 60-260                       |  |  |
| Recommended static pres  | Suie        |                       | High | īā                                      | 45                           |  |  |
|                          |             |                       | Med  |   | 40                           |  |  |
|                          |             |                       | Low  |   | 36                           |  |  |
| Sound pressure level     |             |                       | Hiah | dB (A)                                  | 45                           |  |  |
|                          |             | Heating               | Med  |   | 40                           |  |  |
|                          |             |                       | Low  |   | 36                           |  |  |
|                          |             | Dimensions (H × W × I | D)   |   | 378 x 1,090 x 53.2           |  |  |
|                          |             | Fin pitch             |      | mm                                      | 1.3                          |  |  |
| Heat exchanger type      |             | Rows x Stages         |      |   | 4 x 18                       |  |  |
|                          |             | Pipe type             |      |   | Copper                       |  |  |
|                          |             | Fin type              |      |   | Aluminium                    |  |  |
| Enclosuro                |             | Material              |      |   | Steel                        |  |  |
| Eliciosule               |             | Colour                |      |   | -                            |  |  |
| Dimensions               | Net         |                       |      | mm                                      | 425 x 1,250 x 490            |  |  |
| (H × W × D)              | Gross       |                       |      |   | 490 x 1,440 x 655            |  |  |
| Weight Net               |             |                       | ka   | 54                                      |                              |  |  |
|                          | Gross       |                       |      |   | 61                           |  |  |
|                          | Size        | Liquid                |      | mm                                      | Ø 9.52 (Ø 3/8 in.)           |  |  |
| Connection pipe          |             | Gas                   |      |   | Ø 15.88 (Ø 5/8 in.)          |  |  |
|                          | Method      | 1                     | r    |   | Flare                        |  |  |
|                          |             | Cooling               | F    | <u>°C</u>                               | 18 to 32                     |  |  |
| Operation range          |             |                       |      | %KH                                     | 80 or less                   |  |  |
| Demote controllent       |             | Ineating              |      | Ű                                       | 16 to 30                     |  |  |
| Remote controller type   | Matarial    |                       |      |   | Wired                        |  |  |
| Drain port               |             |                       |      |   |                              |  |  |
|                          | 13126       |                       | I    | 11111                                   | Ø 23.4 (I.D.), Ø 25.4 (U.D.) |  |  |

Note : Specifications are based on the following conditions. Cooling : Indoor temperature of 27 °CDB / 19 °CWB and outdoor temperature of 35 °CDB/24 °CWB. Heating : Indoor temperature of 20 °CDB / 15 °CWB and outdoor temperature of 7 °CDB/6 °CWB. Standard static pressure : 60 Pa. Pipe length : 7.5 m, Height difference : 0 m.(Outdoor unit - Indoor unit) The protective function may work when using it outside the temperature range mentioned above. Drain hose should be field supplied. \*: The maximum current is the maximum value when operated within the operation range.

# 4. DIMENSIONS ■ MODEL: AR\*G60LHTA





REAR VIEW





SIDE VIEW (R)



FRONT VIEW



## ■ INSTALLATION PLACE

#### ●AR\*G60LHTA

Installation by which service space is made on top of the unit (recommended).



Installation by which service is carried out from the bottom of the unit.



#### MAINTENANCE SPACE

Provide a maintenance space for inspection purposes as shown below. Do not place any wiring or illumination in the service space, as they will impede service.

(Unit : mm)



G60LHTA

# 5. WIRING DIAGRAMS ■ MODEL: AR\*G60LHTA



# **6. CAPACITY TABLE** 6-1. COOLING CAPACITY

This table is created using the rated capacity.

## ■ MODEL: AR\*G60LHTA

AFR 59.2

|      |      |       | Indoor temperature |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |
|------|------|-------|--------------------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
|      | °CDB |       | 18                 |      |       | 21    |      |       | 23    |      |       | 25    |      |       | 27    |      |       | 29    |      |       | 32    |      |
|      | °CWB |       | 12                 |      |       | 15    |      |       | 16    |      |       | 18    |      |       | 19    |      |       | 21    |      |       | 23    |      |
|      | °CDB | TC    | SHC                | IP   | TC    | SHC   | IP   | TC    | SHC   | IP   | TC    | SHC   | IP   | TC    | SHC   | IP   | TC    | SHC   | IP   | TC    | SHC   | IP   |
|      | -15  | 13.04 | 12.32              | 2.77 | 14.53 | 12.40 | 2.82 | 15.02 | 13.48 | 2.83 | 16.01 | 13.52 | 2.86 | 16.51 | 14.60 | 2.87 | 17.50 | 14.54 | 2.90 | 18.49 | 15.49 | 2.93 |
|      | -10  | 13.03 | 12.31              | 2.78 | 14.51 | 12.38 | 2.82 | 15.01 | 13.46 | 2.83 | 16.00 | 13.51 | 2.86 | 16.49 | 14.59 | 2.88 | 17.48 | 14.53 | 2.90 | 18.47 | 15.48 | 2.93 |
| e    | 0    | 13.03 | 12.33              | 2.79 | 14.51 | 12.40 | 2.84 | 15.00 | 13.48 | 2.85 | 15.99 | 13.53 | 2.88 | 16.49 | 14.61 | 2.89 | 17.48 | 14.55 | 2.92 | 18.47 | 15.50 | 2.95 |
| atur | 5    | 12.92 | 12.35              | 3.17 | 14.39 | 12.43 | 3.22 | 14.88 | 13.51 | 3.23 | 15.86 | 13.55 | 3.27 | 16.35 | 14.64 | 3.28 | 17.33 | 14.58 | 3.32 | 18.32 | 15.53 | 3.35 |
| pen  | 10   | 12.68 | 12.19              | 3.31 | 14.13 | 12.27 | 3.37 | 14.61 | 13.33 | 3.38 | 15.57 | 13.38 | 3.42 | 16.05 | 14.45 | 3.44 | 17.02 | 14.39 | 3.47 | 17.98 | 15.33 | 3.50 |
| tem  | 15   | 12.45 | 12.00              | 3.56 | 13.86 | 12.08 | 3.62 | 14.34 | 13.13 | 3.63 | 15.28 | 13.17 | 3.67 | 15.76 | 14.22 | 3.69 | 16.70 | 14.17 | 3.73 | 17.65 | 15.09 | 3.76 |
| oor  | 20   | 12.32 | 12.00              | 3.34 | 13.72 | 12.08 | 3.39 | 14.19 | 13.13 | 3.41 | 15.12 | 13.17 | 3.44 | 15.59 | 14.22 | 3.46 | 16.53 | 14.17 | 3.49 | 17.46 | 15.09 | 3.53 |
| outd | 25   | 12.21 | 11.85              | 3.89 | 13.60 | 11.92 | 3.95 | 14.06 | 12.96 | 3.98 | 14.99 | 13.01 | 4.02 | 15.45 | 14.05 | 4.04 | 16.38 | 13.99 | 4.08 | 17.31 | 14.90 | 4.12 |
| 0    | 30   | 11.69 | 11.62              | 4.46 | 13.03 | 11.74 | 4.53 | 13.47 | 12.77 | 4.56 | 14.36 | 12.81 | 4.60 | 14.80 | 13.83 | 4.63 | 15.69 | 13.78 | 4.67 | 16.58 | 14.68 | 4.72 |
|      | 35   | 11.85 | 11.60              | 4.54 | 13.20 | 11.87 | 4.61 | 13.65 | 12.90 | 4.63 | 14.55 | 12.94 | 4.68 | 15.00 | 13.98 | 4.70 | 15.90 | 13.92 | 4.75 | 16.80 | 14.83 | 4.79 |
|      | 40   | 11.00 | 10.99              | 5.23 | 12.26 | 11.25 | 5.32 | 12.68 | 12.23 | 5.34 | 13.51 | 12.27 | 5.40 | 13.93 | 13.25 | 5.42 | 14.77 | 13.19 | 5.48 | 15.60 | 14.05 | 5.53 |
|      | 46   | 7.14  | 7.14               | 3.66 | 7.95  | 7.67  | 3.71 | 8.22  | 8.13  | 3.73 | 8.76  | 8.36  | 3.77 | 9.03  | 9.03  | 3.79 | 9.57  | 9.00  | 3.83 | 10.12 | 9.58  | 3.87 |

DUCT TYPE AR\*G60LHTA

AFR: Air Flow Rate (m<sup>3</sup>/min) TC : Total Capacity (kW) SHC: Sensible Heat Capacity (kW) IP : Input Power (kW)

## **6-2. HEATING CAPACITY**

## This table is created using the rated capacity.

## ■ MODEL: AR\*G60LHTA

AFR 59.2

|       |      |      | Indoor temperature |      |       |      |       |      |       |      |       |      |
|-------|------|------|--------------------|------|-------|------|-------|------|-------|------|-------|------|
|       |      | °CDB | 16                 |      | 18    |      | 20    |      | 22    |      | 24    |      |
|       | °CDB | °CWB | тс                 | IP   | TC    | IP   | тс    | IP   | TC    | IP   | тс    | IP   |
|       | -15  | -16  | 13.17              | 5.18 | 12.86 | 5.29 | 12.55 | 5.40 | 12.23 | 5.51 | 11.92 | 5.62 |
| đ     | -10  | -11  | 14.64              | 5.18 | 14.29 | 5.29 | 13.95 | 5.40 | 13.60 | 5.51 | 13.25 | 5.62 |
| ature | -5   | -7   | 16.23              | 5.18 | 15.85 | 5.29 | 15.46 | 5.40 | 15.07 | 5.51 | 14.69 | 5.62 |
| pera  | 0    | -2   | 17.48              | 5.19 | 17.06 | 5.30 | 16.64 | 5.41 | 16.23 | 5.52 | 15.81 | 5.63 |
| tem   | 5    | 3    | 18.84              | 5.20 | 18.39 | 5.31 | 17.94 | 5.42 | 17.49 | 5.53 | 17.05 | 5.64 |
| oor   | 7    | 6    | 18.90              | 4.94 | 18.45 | 5.05 | 18.00 | 5.15 | 17.55 | 5.25 | 17.10 | 5.36 |
| outd  | 10   | 8    | 20.74              | 4.62 | 20.25 | 4.71 | 19.76 | 4.81 | 19.26 | 4.91 | 18.77 | 5.00 |
| 0     | 15   | 10   | 22.28              | 4.58 | 21.75 | 4.68 | 21.22 | 4.77 | 20.69 | 4.87 | 20.16 | 4.94 |
|       | 20   | 15   | 21.63              | 4.51 | 21.12 | 4.60 | 20.60 | 4.69 | 20.09 | 4.79 | 19.57 | 4.86 |
|       | 24   | 18   | 19.91              | 3.75 | 19.43 | 3.83 | 18.96 | 3.91 | 18.48 | 3.99 | 18.01 | 4.05 |

DUCT TYPE AR\*G60LHTA

AFR: Air Flow Rate (m<sup>3</sup>/min) TC : Total Capacity (kW) IP : Input Power (kW)

# 7. FAN PERFORMANCE AND CAPACITY ■ MODEL: AR\*G60LHTA









# 8. OPERATION NOISE 8-1. NOISE LEVEL CURVE ■ MODEL: AR\*G60LHTA

Cooling



Condition

Static pressure : 60Pa

Static pressure mode : Normal

# 8-2. SOUND LEVEL CHECK POINT



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# 9. ELECTRIC CHARACTERISTICS

| Model name                    | AR*G60LHTA            |     |            |
|-------------------------------|-----------------------|-----|------------|
| Power supply                  | Voltage               | V   | 230~       |
|                               | Frequency             | Hz  | 50         |
| Max Operating Current (Indo   | or unit)              | A   | 3.5        |
| Wiring spec.                  | Connection cable      | mm² | 1.5 (Min.) |
| (Indoor unit to outdoor unit) | Limited wiring length | m   | 75         |

DUCT TYPE AR\*G60LHTA

Note: Wiring specification 1. Selected sample

(Selected based on Japan Electrotechnical Standard and Codes Committee E0005)

Limited wiring length : Limit voltage drop to less than 2%. Increase cable gauge if voltage drop is 2% or more.
 If the transmission wire is longer than 50m, use the bigger conductor size.

# **10. SAFETY DEVICES**

|                       | Protection form            | Model        |
|-----------------------|----------------------------|--------------|
|                       | FIDIECTION JOINT           | AR*G60LHTA   |
| Circuit protection    | Current fuse (PCB)         | 250V 3.15A   |
| Ean motor protoction  | Thormal protoction program | 115±15°C OFF |
| Fair motor protection | Thermal protection program | 70°C ON      |

# 11. EXTERNAL INPUT & OUTPUT

| INPUT         | OUTPUT            | Connector | REMARKS               |
|---------------|-------------------|-----------|-----------------------|
| CONTROL INPUT | —                 | CN103     |                       |
| —             | OPERATION STATUS  | CN100     |                       |
| —             | ERROR STATUS      | CN101     | input/output settings |
| _             | FRESH AIR CONTROL | CN161     | for details.          |
| _             | AUXILIARY HEATER  | CN160     |                       |

## 11-1. EXTERNAL INPUT

## ■ CONTROL INPUT (Operation/Stop or Forced stop)

The air conditioner can be remotely operated by means of the following on-site work.

"Operation/Stop" mode or "Forced stop" mode can be selected with function setting of indoor unit.

Unit operation is started at the following contents by adding the contact input of a commercial ON/ OFF switch to a connector on the external control PC board and turning it ON.

| Unit operation  | Initial setting after power is ON | Starting mode other than initial setting |
|-----------------|-----------------------------------|--|
| Operation mode  | Auto changeover                   | Mode at previous operation               |
| Set temperature | 24°C                              | Temperature at previous operation        |
| Air flow mode   | AUTO                              | Mode at previous operation               |

#### • Circuit diagram example



\* Make the distance from the PC board to the connected unit within 10 m. Contact capacity : 5VDC or more, 15mA or more. Please use non-polar relays and switches.

#### • When function setting is in "Operation/Stop" mode





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## 11-2. EXTERNAL OUTPUT

## ■ OPERATION STATUS OUTPUT

An air conditioner operation status signal can be output.

#### Circuit diagram example



 $^{\ast}$  Make the distance from the PC board to the connected unit within 10m. Relay spec. : Max.24VDC, 10mA to less than 500mA.







## **ERROR STATUS OUTPUT**

An air conditioner condition normal/error status signal can be output.

#### • Circuit diagram example



\* Make the distance from the PC board to the connected unit within 10m. Relay spec. : Max.24VDC, 10mA to less than 500mA.





## FRESH AIR CONTROL OUTPUT

A signal linked to air conditioner indoor fan ON can be output.

\* However, signal becomes OFF during cold air prevention control operation.

#### • Circuit diagram example



Wire (Fresh air output)



## AUXILIARY HEATER OUTPUT

A signal is outputed from Connector when indoor fan and compressor is turned on under heating operation.

- \*Signal output performance specifications are as shown on the right
- Ex. When Set Temperature(Ts) is 22°C ;
- and Room Temperature(Tr) increase above 12°C, signal output is on.
- and Room Temperature(Tr) increase above 21°C, signal output is off.



and Room Temperature(Tr) decrease below 19°C, signal output is on.
and Room Temperature(Tr) decrease below 10°C, signal output is off.

#### •Jumper wire (Indoor Unit)

This is used to continue indoor unit fan operation for 1 minute after thermo OFF in heating mode. 1 minute delay control set by cutting jumper wire on PCB.

#### Circuit diagram example





CAUTION
Please place an external a heater between the indoor unit and the ductwork.
Please be sure to use delay control of the fan.

### Parts (Optional)

| Model name |  |
|------------|--|
| UTD-ECS5A  |  |

Wire (Heater output)

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# **12. FUNCTION SETTINGS**

# 12-1. INDOOR UNIT

UCT TYPE R\*G60LHTA

| INDOOR UNIT |      |                                   |  |  |
|-------------|------|-----------------------------------|--|--|
|             | 1    |                                   |  |  |
|             | 2    | Domoto controllor oddroco ootting |  |  |
| DIP-3000    | 3    |                                   |  |  |
|             | 4    |                                   |  |  |
|             | JM40 | Cotting forbiddon                 |  |  |
| Jumper Wire | JM41 |                                   |  |  |
|             | JM42 | Fan delay setting                 |  |  |

## SWITCH POSITION



### ■ DIP-SW SETTING

TYPE 60LHTA

#### Remote controller address setting (SW50)

A number of indoor units can be operated at the same time using a single remote controller.

Set the unit number of each indoor unit using the DIP switches on the indoor unit circuit board. (See the following table.)

The DIP switches are normally set to make the unit number 00.

|                           | (♦Factory setting) |         |          |     |
|---------------------------|--------------------|---------|----------|-----|
| Romoto controllor address |                    | DIP swi | itch No. |     |
| Remote controller address | 1                  | 2       | 3        | 4   |
| • 00                      | OFF                | OFF     | OFF      | OFF |
| 01                        | ON                 | OFF     | OFF      | OFF |
| 02                        | OFF                | ON      | OFF      | OFF |
| 03                        | ON                 | ON      | OFF      | OFF |
| 04                        | OFF                | OFF     | ON       | OFF |
| 05                        | ON                 | OFF     | ON       | OFF |
| 06                        | OFF                | ON      | ON       | OFF |
| 07                        | ON                 | ON      | ON       | OFF |
| 08                        | OFF                | OFF     | OFF      | ON  |
| 09                        | ON                 | OFF     | OFF      | ON  |
| 10                        | OFF                | ON      | OFF      | ON  |
| 11                        | ON                 | ON      | OFF      | ON  |
| 12                        | OFF                | OFF     | ON       | ON  |
| 13                        | ON                 | OFF     | ON       | ON  |
| 14                        | OFF                | ON      | ON       | ON  |
| 15                        | ON                 | ON      | ON       | ON  |

## JUMPER WIRE SETTING

#### • JM40, 41 setting forbidden

#### • Fan delay setting (JM42)

When the indoor unit is stopped while operating in conjunction with auxiliary heater, the indoor unit fan operation will continue for one minute.

|   |            | (♦Factory setting) |
|---|------------|--------------------|
| • | JM 42      | JM state           |
|   | Connect    | Invalid            |
|   | Disconnect | Valid              |

# 12-2. INDOOR UNIT (Setting by remote controller)

- The function settings of the control of the indoor unit can be changed by this procedure according to the installation conditions. Incorrect settings can cause the indoor unit to malfunction.
- After the power is turned on, perform The Function Setting according to the installation conditions using the remote controller.
- The settings may be selected between the following two: Function Number or Setting Value.
- · Settings will not be changed if invalid numbers or setting values are selected.

#### **PREPARATION**

- Turn on the power.
- \* Before turning on the power of the indoor units, make sure the piping air-tight test and vacuuming have been conducted.
- \* Also check again to make sure no wiring mistakes were made before turning on the power.

## ■ FUNCTION SETTING METHOD (for Wired remote controller)

#### Setting method

(1) Press the SET TEMP. buttons (V) (A) and FAN button simultaneously for more than 5 seconds to enter the function setting mode.



(2) Press the SET BACK button to select the indoor unit number.



Unit number of INDOOR UNIT

3) Press the Set time buttons to select the function number.



(4) Press the SET TEMP. buttons (V) (A) to select the setting value. The display flashes during setting value selection.





- (5) Press the TIMER SET button to confirm the setting. Press the TIMER SET button for a few seconds until the setting value stops flashing. If the setting value display changes or if "- -" is displayed when the flashing stops, the setting value has not been set correctly. (An invalid setting value may have been selected for the indoor unit.)
- (6) Repeat steps 2 to 5 to perform additional settings. Press the SET TEMP. buttons (♥) (∧) and FAN simultaneously again for more than 5 seconds to cancel the function setting mode. In addition, the function setting mode will be automatically canceled after 1 minute if no operation is performed.
- (7) After completing the FUNCTION SETTING, be sure to turn off the power and turn it on again.

• After turning off the power, wait 30 seconds or more before turning on it again. The Function Setting will not become active unless the power is turned off then on again.

#### ■ CONTENTS OF FUNCTION SETTING

- Follow the instructions in the Local Setup Procedure, which is supplied with the remote control, in accordance with the installed condition.
- After the power is turned on, perform the Function Setting on the remote control.
- The settings may be selected between the following two: Function Number or Setting Value.
- · Settings will not be changed if invalid numbers or setting values are selected.

| 1) | Filter sign                              |  |
|----|--|--|
| 2) | Static pressure                          |  |
| 3) | Room temperature control for cooling     |  |
| 4) | Room temperature control for heating     |  |
| 5) | Auto restart                             |  |
| 6) | Room temperature sensor switching        |  |
| 7) | Cool air prevention                      |  |
| 8) | External input control                   |  |
| 9) | Room temperature sensor switching (Aux.) |  |

#### 1) Filter sign

Select appropriate intervals for displaying the filter sign on the indoor unit according to the estimated amount of dust in the air of the room.

If the indication is not required, select "No indication" (03)..

|                             |                 | (◆Factory setting) |
|-----------------------------|-----------------|--------------------|
| Setting description         | Function number | Setting value      |
| Standard (2500 hours)       | 11              | 00                 |
| Long interval (5000 hours)  |                 | 01                 |
| Short interval (1250 hours) |                 | 02                 |
| No indication               |                 | 03                 |

#### 2) Static pressure

Select the appropriate static pressure according to the installation conditions..

|   |                           |                 | (▼Factory setting) |
|---|---------------------------|-----------------|--------------------|
|   | Setting description       | Function number | Setting value      |
| ◆ | Normal (60Pa)             |                 | 00                 |
|   | Static pressure 1 (100Pa) |                 | 02                 |
|   | Static pressure 2 (150Pa) | 21              | 03                 |
|   | Static pressure 3 (200Pa) |                 | 04                 |
|   | Static pressure 4 (250Pa) |                 | 05                 |

#### 3) Room temperature control for cooling

YPE 0LHTA

Depending on the installed environment, the room temperature sensor may require correction. The settings may be selected as shown in the table below.

|   |                         |                 | (     Factory setting) |
|---|-------------------------|-----------------|------------------------|
|   | Setting description     | Function number | Setting value          |
| • | Standard                |                 | 00                     |
|   | Higher control          |                 | 01                     |
|   | Slightly higher control | 30              | 02                     |
|   | Slightly lower control  |                 | 03                     |
|   | Lower control           |                 | 04                     |

#### 4) Room temperature control for heating

Depending on the installed environment, the room temperature sensor may require correction. The settings may be changed as shown in the table below.

|   |                         |                 | (♦Factory setting) |
|---|-------------------------|-----------------|--------------------|
|   | Setting description     | Function number | Setting value      |
| • | Standard                |                 | 00                 |
|   | Higher control          |                 | 01                 |
|   | Slightly higher control | 31              | 02                 |
|   | Slightly lower control  |                 | 03                 |
|   | Lower control           |                 | 04                 |

#### 5) Auto restart

Enable or disable automatic restart after a power interruption.

|   |                     |                 | (♦Factory setting) |
|---|---------------------|-----------------|--------------------|
|   | Setting description | Function number | Setting value      |
| • | Enable              | 40              | 00                 |
|   | Disable             |                 | 01                 |

\* Auto restart is an emergency function such as for power outage etc. Do not attempt to use this function in normal operation. Be sure to operate the unit by remote controller or external device..

#### 6) Room temperature sensor switching

(Only for wired remote controller)

When using the Wired remote controller temperature sensor, change the setting to "Both" (01).

|   |                     |                 | (     Factory setting) |
|---|---------------------|-----------------|------------------------|
|   | Setting description | Function number | Setting value          |
| • | Indoor unit         | 40              | 00                     |
|   | Both                | 42              | 01                     |

00: Sensor on the indoor unit is active.

01: Sensors on both indoor unit and wired remote controller are active.

\*Remote controller sensor must be turned on by using the remote controller.

#### 7) Cool air prevention

This setting is to disable the cold air prevention function during heating operation. When disabled, the fan setting will always follow the setting on the remote controller. (Excluding defrost mode)

|   |                     |                 | (♦Factory setting) |
|---|---------------------|-----------------|--------------------|
|   | Setting description | Function number | Setting value      |
| ٠ | Enable              | 40              | 00                 |
|   | Disable             | 43              | 01                 |

#### 8) External input control

"Operation/Stop" mode or "Forced stop" mode can be selected.

|     |                     |                 | (     Factory setting) |
|-----|---------------------|-----------------|------------------------|
|     | Setting description | Function number | Setting value          |
| ♦ [ | Operation/Stop mode |                 | 00                     |
|     | (Setting forbidden) | 46              | 01                     |
|     | Forced stop mode    |                 | 02                     |

#### 9) Room temperature sensor switching (Aux.)

To use the temperature sensor on the wired remote controller only, change the setting to "Wired remote controller" (01). This function will only work if the function setting 42 is set at "Both" (01)

|   |                         |                 | ( <b>•</b> Factory setting) |
|---|-------------------------|-----------------|-----------------------------|
|   | Setting description     | Function number | Setting value               |
| • | Both                    | 40              | 00                          |
|   | Wired remote controller | 40              | 01                          |

# 12-3. WIRED REMOTE CONTROLLER

| 1 | Can not be used. (Do not change) |
|---|----------------------------------|
| 2 | Dual remote controller setting   |
| 3 | Can not be used. (Do not change) |
| 4 | Can not be used. (Do not change) |
| 5 | Can not be used. (Do not change) |
| 6 | Memory backup setting            |
|   | 1<br>2<br>3<br>4<br>5<br>6       |

## SWITCH POSITION



## ■ DIP SWITCH SETTING

#### • Dual remote controller setting

Set the remote controller DIP switch No.2 according to the following table.

|   |            |              | (♦····Factory setting) |
|---|------------|--------------|------------------------|
|   | Number     | Primary unit | Secondary unit         |
|   | controller | DIP-SW No.2  | DIP-SW No.2            |
| ٠ | 1 (Normal) | OFF          | —                      |
|   | 2 (Dual)   | OFF          | ON                     |

#### Memory backup setting

Set to ON to use batteries for the memory backup. If batteries are not used, all of the settings stored in memory will be deleted if there is a power failure.

|   |                | (♦····Factory setting) |
|---|----------------|------------------------|
| • | DIP-SW<br>No.6 | Memory backup          |
|   | OFF            | Invalidity             |
|   | ON             | Validity               |

# 13. OPTIONAL PARTS 13-1. CONTROLLER

DUCT TYPE AR\*G60LHTA

| Exterior | Parts name                     | Model No.     | Summary  |
|----------|--------------------------------|---------------|--|
|          | Wired<br>remote<br>controller  | UTY-<br>RVN*M | Large and full-dot liquid crystal<br>screen, wide and large keys<br>easy to press, user-intuitive<br>arrow key.                                    |
|          | Wired<br>remote<br>controller  | UTY-<br>RNN*M | The room temperature can be<br>controlled by being detected<br>the temperature accurately<br>with built-in thermo sensor.                          |
|          | Simple<br>remote<br>controller | UTY-<br>RSN*M | Compact remote controller<br>concentrates on the basic<br>functions such as Start/Stop,<br>Fan Control, Temperature<br>Setting and Operation mode. |
|          | IR Receiver<br>Unit            | UTY-LRH*M     | Unit control is performed by wireless remote controller.   |

## 13-2. OTHERS

| Exterior               | Parts name           | Model No. | Summary  |  |
|------------------------|----------------------|-----------|--|--|
|                        | Remote<br>sensor     | UTY-XSZX  | New amenity space can<br>be offered by installing the<br><b>Remote sensor</b> in the remote<br>controller. |  |
| (x1) (x2)<br>(x1) (x2) | External control set | UTD-ECS5A | Use to connect with various<br>peripheral devices and air<br>conditioner PC board.<br>(Set of 6)           |  |

# **2. OUTDOOR UNIT**

SINGLE TYPE : AO\*G60LATT

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## 1. FEATURES ■ FEATURES ● Energy saving technology (ALL DC)

DOOR UNIT

#### DC twin rotary compressor



DC twin rotary compressor Efficiency in all load regions is good. Especially good performance from low to medium at normal operation.



#### DC fan motor



Miniaturized, low noise, high efficiency, multi-stage DC fan motor is mounted.

#### Peak cut operation

Peak cut mode (Optional parts: UTY-XWZXZ2)

Suppresses maximum capacity and performs energy-saving operation and can prevent breaker tripping.

This function performs operation by setting a peak current value and reducing the power consumption.

\* Performance drops by reducing the power consumption preferentially.

- Level 1 ... Performs operation which suppresses the power consumption to almost 0% by stopping the compressor.
- Level 2 ... Performs operation which suppresses the power consumption to 50% of the rated power consumption value.
- Level 3 ... Performs operation which suppresses the power consumption to 75% of the rated power consumption value.
- Level 4 ... Performs operation which suppresses the power consumption to the rated power consumption value (100%).



#### • High install ability long piping correspondence



#### Space saving

#### Compact size

High performance has been realized with a compact outdoor unit.

Due to the compact size of the outdoor unit, the installation space required has been reduced allowing for a wider selection on installation locations.

#### • 4-directions piping connection

Four directions piping connection is possible. The perfect route can be selected according to the installation.





#### Low outdoor air temperature correspondence

Both cooling and heating operations can be performed when the outdoor air temperature is low.



#### • External output (option)

#### Compressor status output

This output indicates the outdoor unit compressor status.

#### Blue fin heat exchanger

Corrosion-resistance of the heat exchanger even in coastal areas has been improved by blue fin treatment of the outdoor unit heat exchanger.



#### Error status output

This output indicates the outdoor unit and connected indoor unit's Normal / Error.

#### • Service, maintenance

- "Error display" and "Operating information" can be explained by LED display.
- Pump down operation can be performed by one button when refrigerant recovery.



#### Quiet operation

Low noise mode (Optional parts: UTY-XWZXZ2)

Suppresses operating sound.

This function suppresses the outdoor unit noise value to the following 2 level.

\* Performance may drop depending on the outside air temperature condition, etc.

Level 1 ... Rated noise value -2dB Level 2 ... Rated noise value -4dB



## 2. SPECIFICATIONS

| Туре                    |             |                 |                   |                   | INVERTER HEATPUMP   |  |  |
|-------------------------|-------------|-----------------|-------------------|-------------------|---|--|--|
| Model name              |             |                 |                   | AO*G60LATT        |   |  |  |
| Power source            |             |                 |                   |                   | 3N~ 400V 50Hz   |  |  |
| Available voltage       | range       |                 |                   |                   | 3N~ 342V - 457V 50Hz                                      |  |  |
| Starting current        |             |                 |                   | A                 | 7.6   |  |  |
|                         | Airflow     | Cooling         |                   | m <sup>3</sup> /h | 6,900   |  |  |
| Fan                     | rate        | Heating         |                   |                   | 7,300   |  |  |
| Fall                    | Type × Q'ty | /               |                   |                   | Propeller × 2   |  |  |
|                         | Motor outp  | ut              |                   | W                 | 104   |  |  |
| Sound procesure le      | avol.       | Cooling         |                   |                   | 56  |  |  |
|                         | evei        | Heating         |                   |                   | 58  |  |  |
|                         |             | Dimensior       | ns (H × W × D)    |                   | 1260 × 900 × 36.4   |  |  |
|                         |             | Fin pitch       |                   |                   | 1.30  |  |  |
| Heat exchanger to       | (20         | Rows x St       | ages              |                   | 2 × 60  |  |  |
| near exchanger ty       | he          | Pipe type       |                   |                   | Copper  |  |  |
|                         |             | Type (Material) |                   |                   | Corrugate (Aluminium)                                     |  |  |
|                         |             | гштуре          | Surface treatment |                   | Corrosion resistance (Blue fin)                           |  |  |
| Comprosoor              | Type × Q'ty | /               |                   |                   | Twin Rotary × 1   |  |  |
| Compressor              | Motor outp  | ut              |                   | W                 | 3750  |  |  |
| Defrigerent             |             | Туре            |                   |                   | R410A   |  |  |
| Reingerant              |             | Charge          |                   | g                 | 3450  |  |  |
| Refrigerant oil         |             | Туре            |                   |                   | POE   |  |  |
|                         |             | Material        |                   |                   | Steel sheet   |  |  |
| Enclosure               |             | Colour          |                   |                   | BEIGE<br>( Approximate colour of MUNSELL 10YR 7.5 / 1.0 ) |  |  |
| Dimensions              | Net         |                 |                   |                   | 1290 × 900 × 330  |  |  |
| $(H \times W \times D)$ | Gross       |                 |                   | 7 <sup>mm</sup>   | 1430 × 1050 × 445   |  |  |
| M/aiabt                 | Net         |                 |                   | 1.0               | 104   |  |  |
| weight                  | Gross       |                 |                   | - кд              | 113   |  |  |
|                         | Size        | Liquid          |                   |                   | Ø 9.52 (Ø 3/8 in.)  |  |  |
|                         | (Standard)  | Gas             |                   | 7 mm              | Ø 15.88 (Ø 5/8 in.)                                       |  |  |
| Composition nine        | Method      |                 |                   | <u>^</u>          | Flare   |  |  |
| Connection pipe         | Pre-charge  | elength         |                   |                   | 30  |  |  |
|                         | Max. length | ı               |                   | ] m               | 75  |  |  |
|                         | Max. heigh  | t difference    |                   | ]                 | 30  |  |  |
| Operation report        |             | Cooling         |                   | -<br>             | -15 to 46   |  |  |
| Operation range         |             | Heating         |                   |                   | -15 to 24   |  |  |
|                         |             |                 |                   |                   |   |  |  |

Note : Specifications are based on the following conditions. Cooling : Indoor temperature of 27 °CDB / 19 °CWB.and outdoor temperature of 35 °CDB/24 °CWB. Heating : Indoor temperature of 20 °CDB / 15 °CWB.and outdoor temperature of 7 °CDB/6 °CWB. Pipe length : 7.5 m, Height difference : 0 m.(Outdoor unit - Indoor unit) The protective function may work when using it outside the temperature range mentioned above.

## 3. DIMENSIONS ■ MODEL: AO\*G60LATT



Bottom view

(Unit : mm)





# 4. INSTALLATION PLACE 4-1. SINGLE OUTDOOR UNIT INSTALLATION ■WHEN THE UPWARD AREA IS OPEN



## WHEN AN OBSTRUCTION IS PRESENT ALSO IN THE UPWARD AREA

Obstacles at rear and above only

Obstacles at rear, sides, and above only

(Unit : mm)





# 4-2. MULTIPLE OUTDOOR UNIT INSTALLATION ■ WHEN THE UPWARD AREA IS OPEN



# ■ WHEN AN OBSTRUCTION IS PRESENT ALSO IN THE UPWARD AREA





# 4-3. OUTDOOR UNIT INSTALLATION IN MULTI ROW

Single parallel unit arrangement

Multiple parallel unit arrangement



(Unit : mm)

# 5. REFRIGERANT CIRCUIT ■ MODEL: AO\*G60LATT



## 6. WIRING DIAGRAMS ■ MODEL: AO\*G60LATT

OUTDOOR UNIT AO\*G60LATT



## 7. CAPACITY COMPENSATION RATE FOR PIPE LENGTH AND HEIGHT DIFFERENCE

## ■ MODEL: AO\*G60LATT

| COOLING      |                               |      | Pipe length (m) |       |       |       |       |       |       |       |       |
|--------------|-------------------------------|------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|
|              |                               |      | 5               | 7.5   | 10    | 20    | 30    | 40    | 50    | 60    | 75    |
|              |                               | 30   | -               | -     | -     | -     | 0.871 | 0.837 | 0.803 | 0.768 | 0.717 |
|              | *1                            | 20   | -               | -     | -     | 0.921 | 0.886 | 0.851 | 0.816 | 0.781 | 0.729 |
|              | Indoor unit is<br>higher than | 10   | -               | -     | 0.971 | 0.936 | 0.901 | 0.865 | 0.830 | 0.794 | 0.741 |
|              | outdoor unit.                 | 7.5  | -               | 0.988 | 0.975 | 0.940 | 0.904 | 0.869 | 0.833 | 0.798 | 0.744 |
| Height       |                               | 5    | 0.992           | 0.992 | 0.979 | 0.944 | 0.908 | 0.872 | 0.836 | 0.801 | 0.747 |
| difference H |                               | 0    | 1.000           | 1.000 | 0.987 | 0.951 | 0.915 | 0.879 | 0.843 | 0.807 | 0.753 |
| (m)          |                               | -5   | 1.000           | 1.000 | 0.987 | 0.951 | 0.915 | 0.879 | 0.843 | 0.807 | 0.753 |
|              | *2                            | -7.5 | -               | 1.000 | 0.987 | 0.951 | 0.915 | 0.879 | 0.843 | 0.807 | 0.753 |
|              | Indoor unit is<br>lower than  | -10  | -               | -     | 0.971 | 0.951 | 0.915 | 0.879 | 0.843 | 0.807 | 0.753 |
|              | outdoor unit                  | -20  | -               | -     | -     | 0.951 | 0.915 | 0.879 | 0.843 | 0.807 | 0.753 |
|              |                               | -30  | -               | -     | -     | -     | 0.915 | 0.879 | 0.843 | 0.807 | 0.753 |

| HEATING      |                               |      | Pipe length (m) |       |       |       |       |       |       |       |       |
|--------------|-------------------------------|------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|
|              |                               |      | 5               | 7.5   | 10    | 20    | 30    | 40    | 50    | 60    | 75    |
|              |                               | 30   | -               | -     | -     | -     | 0.978 | 0.968 | 0.958 | 0.948 | 0.935 |
|              | *1                            | 20   | -               | -     | -     | 0.988 | 0.978 | 0.968 | 0.958 | 0.948 | 0.935 |
|              | Indoor unit is<br>higher than | 10   | -               | -     | 0.998 | 0.988 | 0.978 | 0.968 | 0.958 | 0.948 | 0.935 |
|              | outdoor unit.                 | 7.5  | -               | 1.000 | 0.998 | 0.988 | 0.978 | 0.968 | 0.958 | 0.948 | 0.935 |
| Height       |                               | 5    | 1.000           | 1.000 | 0.998 | 0.988 | 0.978 | 0.968 | 0.958 | 0.948 | 0.935 |
| difference H |                               | 0    | 1.000           | 1.000 | 0.998 | 0.988 | 0.978 | 0.968 | 0.958 | 0.948 | 0.935 |
| (m)          | *2<br>Indoor unit is          | -5   | 0.995           | 0.995 | 0.993 | 0.983 | 0.973 | 0.963 | 0.953 | 0.943 | 0.930 |
|              |                               | -7.5 | -               | 0.993 | 0.990 | 0.980 | 0.970 | 0.960 | 0.950 | 0.940 | 0.928 |
|              |                               | -10  | -               | -     | 0.988 | 0.978 | 0.968 | 0.958 | 0.948 | 0.938 | 0.926 |
|              | outdoor unit                  | -20  | -               | -     | -     | 0.968 | 0.958 | 0.948 | 0.938 | 0.929 | 0.916 |
|              |                               | -30  | -               | -     | -     | -     | 0.948 | 0.939 | 0.929 | 0.919 | 0.907 |



#### Height difference H

OOR UNIT

## 8. PIPE SIZE SELECTION & LIMITATION ■ MODEL : AO\*G60LATT



| Pipe<br>diameter            | Liquid pipes   | 9.52           | (3/8)          | 12.70 (1/2)    |                |  |
|-----------------------------|--|----------------|----------------|----------------|----------------|--|
| [mm (in.)]                  | Gas pipes  | 15.88<br>(5/8) | 19.05<br>(3/4) | 15.88<br>(5/8) | 19.05<br>(3/4) |  |
| Piping<br>length<br>[m (m)] | Max. piping<br>length<br>< L1 ><br>(Max. chargeless<br>length) | 75<br>[30]     | 50<br>[30]     | 35<br>[15]     | 35<br>[15]     |  |

\* The figures enclosed by a thick-lined frame indicate the standard pipe diameter and max. piping length.

## 9. ADDITIONAL CHARGE CALCULATION

## ■ MODEL : AO\*G60LATT

OOR UNIT

| Refrigerant type   |   | R410A |  |
|--------------------|---|-------|--|
| Refrigerant amount | g | 3,450 |  |

## ■ IF ADDITIONAL REFRIGERANT IS REQUIRED

• When the piping is longer than chargeless piping length, additional charging is necessary.

• For the additional amount, see the table below.

#### Additional charging amount



L1 > Chargeless piping length

| Refrigerant pipe size |               | Additional charging amount [g] |              |             |             | Rate  |       |       |
|-----------------------|---------------|--------------------------------|--------------|-------------|-------------|-------|-------|-------|
| σ                     | Pipir         | ng length                      | 30 m or less | 40 m        | 50 m        | 60 m  | 70 m  | [g/m] |
| dar                   | Liquid        | 9.52 (3/8)                     |              |             |             |       |       |       |
| Stano                 | Gas           | 15.88 (5/8)                    | None         | 500         | 1,000       | 1,500 | 2,000 | 50    |
|                       | Pipir         | ng length                      | 30 m or less | 40 m        | 50 m        |       |       |       |
| dn                    | Liquid<br>Gas | 9.52 (3/8)<br>19.05 (3/4)      | None         | 500         | 1,000       |       |       | 50    |
| e la                  | Piping length |                                | 15 m or less | 25 m        | 35 m        |       |       |       |
| Siz                   | Liquid        | 12.70 (1/2)                    |              | 1,000 2,000 |             | /     | /     | 100   |
|                       | Gas           | 15.88 (5/8)                    | None         |             | 1,000 2,000 | /  /  | /     | 100   |
|                       | Cas           | 19.05 (3/4)                    |              |             |             | /     | V     |       |

## 10. AIR FLOW ■ MODEL: AO\*G60LATT

## Cooling

OUTDOOR UNIT AO\*G60LATT

|           | Number of<br>rotations<br>(r.p.m.) | Air flow |      |
|-----------|------------------------------------|----------|------|
| Upper fan | 900                                | m³/h     | 6900 |
|           |                                    | l/s      | 1917 |
| Lower fan | 800                                | CFM      | 4062 |

## Heating

|           | Number of<br>rotations<br>(r.p.m.) | Air flow |      |  |
|-----------|------------------------------------|----------|------|--|
| Upper fan | 900                                | m³/h     | 7300 |  |
|           |                                    | l/s      | 2028 |  |
| Lower fan | 900                                | CFM      | 4294 |  |

# **11. OPERATION NOISE** 11-1. NOISE LEVEL CURVE

■ MODEL: AO\*G60LATT

#### Cooling

OUTDOOR UNIT AO\*G60LATT



## 11-2. SOUND LEVEL CHECK POINT

FDOOR UNIT KG60LATT



# **12. ELECTRIC CHARACTERISTICS**

| Model name                 |                         |                 | AO*G60LATT |
|----------------------------|-------------------------|-----------------|------------|
| Bower oupply               | Voltage                 | V               | 3N~ 400    |
| Fower supply               | Frequency               | Hz              | 50         |
| *1) Max. operating current |                         | A               | 12.5       |
| *2) Wiring anoo            | Circuit breaker current | A               | 16         |
| 2) Winny spec.             | Power cable             | mm <sup>2</sup> | 2.5 (Min)  |

\*1) The maximum current is the total current of indoor unit and outdoor unit.
\*2) Wiring spec. : Selected sample

(Selected based on Japan Electrotechnical Standard and Codes Committee E0005)

## **13. SAFETY DEVICES**

OUTDOOR UNIT AO\*G60LATT

|                             | Drotaction form                                   |         | Model   |  |
|-----------------------------|---|---------|---|--|
|                             | Protection form                                   |         | AO*G60LATT  |  |
|                             | Current fuse (Main PCB)                           |         | 250V 5A   |  |
|                             | Current fuse (Main PCB)                           |         | 250V 3.15A  |  |
|                             | Current fuse (Main PCB)                           |         | 250V 10A  |  |
|                             | Protector (Filter PCB)                            |         | 500V 15A  |  |
| Fan motor protection        | Thermal protector                                 |         | OFF:150±15°C<br>ON:120±15°C                                 |  |
| Compressor<br>protection    | Thermal protection program (Compressor temp.)     |         | OFF:110°C<br>ON:80°C  |  |
|                             | Thermal protection program<br>(Discharge temp.)   |         | OFF : 115°C<br>ON : After 7 minutes                         |  |
| High pressure<br>protection | Thermal protection program (Heat exchanger temp.) | Cooling | OFF : 68°C<br>ON : 63°C                                     |  |
|                             | Pressure sensor                                   | Heating | OFF:4.1MPa<br>ON : After 3 minutes                          |  |
| Low pressure protection     | Pressure sensor Cooling                           |         | OFF:0.12MPa or less (for 5 minutes)<br>ON : After 7 minutes |  |

# 14. EXTERNAL INPUT & OUTPUT

| Input          | Output            | Connector | Remarks               |
|----------------|-------------------|-----------|-----------------------|
| Low noise mode | _                 | CN19      |                       |
| Peak cut mode  | _                 | CN19      | See external          |
| _              | Error status      | CN18      | input/output settings |
| _              | Compressor status | CN18      | for actails.          |

## 14-1. EXTERNAL INPUT

ON/OFF of the "Low noise mode" and "Peak cut mode" functions can be specified by external signal.

## LOW NOISE MODE

- The following reduces the operating sound of the outdoor unit from the normal sound. The air conditioner is set to the "Low noise mode" when closing the contact input of a commercial timer or ON/OFF switch to a connector on the outdoor control PC board.
- \* Performance may drop depending on the outside air temperature condition, etc.

#### Circuit diagram example



\* Make the distance from the PC board to the connected unit within 10 m.

- Use the following parts and construct a circuit as shown above.
- Input Signal···ON : Low noise mode, Input Signal···OFF : Normal operation
- \* Set the "Low noise mode" type by "Push switch" on the outdoor control PC board.





## PEAK CUT MODE

• Operation that suppressed the current value can be performed by means of the following onsite work. The air conditioner is set to the Peak cut mode when closing the contact input of a commercial ON/OFF switch to a connector on the outdoor control PC board.

#### • Circuit diagram example



- \* Make the distance from the PC board to the connected unit within 10 m.
- Use the following parts and construct a circuit as shown above.
- Input Signal···ON : Peak cut mode, Input Signal···OFF : Normal operation \*Set the "Peak cut mode" level, refer to "15.FUNCTION SETTING".



| Parts name           | Model name |
|----------------------|------------|
| External connect kit | UTY-XWZXZ2 |



## 14-2. EXTERNAL OUTPUT

### **ERROR STATUS OUTPUT**

• An air conditioner error status signal is produced when a malfunction occurs.

#### • Circuit diagram example

OR UNIT



•Voltage (Chart sign=Vcc) : DC 24V or less

\* Make the distance from the PC board to the connected unit within 10 m.



| Parts name           | Model name |
|----------------------|------------|
| External connect kit | UTY-XWZXZ2 |



### ■ COMPRESSOR STATUS OUTPUT

• Compressor operation status signal is produced when the compressor is running.

#### • Circuit diagram example



\* Make the distance from the PC board to the connected unit within 10 m.



#### Parts (Optional)

| Parts name           | Model name |
|----------------------|------------|
| External connect kit | UTY-XWZXZ2 |



OOR UNIT

## 15. FUNCTION SETTING 15-1. OUTDOOR UNIT

#### 

Never touch electrical components such as the terminal blocks or reactor except the switch on the display board. It may cause a serious accident such as electric shock.

#### 

Discharge the static electricity from your body before setting up the push buttons. Never touch the terminals or the patterns on the parts that are mounted on the board.

## 15-1-1. FIELD SETTING SWITCHES

The positions of the switches on the outdoor unit control board are shown in the figure below.



#### **FUNCTIONS** LED lamps (1) (2) (3) (4) (5) (6) POWER MODE ERROR TEST PUMP LOW NOISE MODE MODE PEAK CUT HEAT 0 Q PUMP DO 0 0 n TEST RUN INITI, LIZE SW1 SW2 SW3 SW4 SW5 SW6

| Display lamp                      |        | Function or operation method   |
|-----------------------------------|--------|--|
| (1) POWER / MODE                  | Green  | Lights on while power on Local setting in<br>outdoor unit or error code is displayed with<br>blink.  |
| (2) ERROR                         | Red    | Blinks during abnormal air-conditioner operation.  |
| (3) TEST RUN (L1)                 | Orange | Lights on during test operation.   |
| (4) PUMP DOWN (L2)                | Orange | Lights on during pump down operation.  |
| (5) LOW NOISE MODE<br>(L3, L4)    | Orange | Lights on during "Low noise" function<br>when local setting is activated.<br>(Lighting pattern of L3 and L4 indicates<br>low noise level) ⇔See page (02-23).   |
| (6) PEAK CUT MODE<br>(L5, L6, L7) | Orange | Lights on during "Peak cut" function when<br>local setting is activated.(Lighting pattern<br>of L5, L6 and L7 indicates peak cut level)<br>⇔ See page (02-24). |

| Switch |             | Function or operation method   |
|--------|-------------|--|
| SW1    | DIP switch  | For selecting cooling or heating during<br>test operation.<br>Positions 2 to 4 of Dip switch are not used. |
| SW2    | Push switch | To switch between "Local setting" and<br>"Error code display".   |
| SW3    | Push switch | To switch between the individual "Local settings" and the "Error code displays".                           |
| SW4    | Push switch | To fix the individual "Local settings" and the "Error code displays".                                      |
| SW5    | Push switch | EXIT   |
| SW6    | Push switch | To start the pump down operation.  |

• Dip switches 1 to 4 at shipment from the factory are set as follows.

| Switch |     |     |     |  |  |
|--------|-----|-----|-----|--|--|
| 1      | 2   | 3   | 4   |  |  |
| COOL   | OFF | OFF | OFF |  |  |

\* Stop the operation of air conditioner before this setting.

LED display part

OOR UNIT



- (1) Switch to "Local setting mode" by pressing [MODE] switch (SW2) for 3 seconds or more.
- (2) Confirm (POWER / MODE) blinks 9 times, and press [ENTER] switch (SW4).

| POWER                              |        | TEST |      | LOWI | VOISE | F    | PEAK CUT | ſ    |
|------------------------------------|--------|------|------|------|-------|------|----------|------|
| MODE                               | LINION | (L1) | (L2) | (L3) | (L4)  | (L5) | (L6)     | (L7) |
| Blinks<br>(9 times)                | 0      | 0    | 0    | 0    | 0     | 0    | 0        | 0    |
| Sign " <sub>O</sub> " : Lights off |        |      |      |      |       |      |          |      |

(3) Press [SELECT] switch (SW3), and adjust LED display as shown below. (Current setting is displayed)

|                   | TEST<br>RUN | PUMP<br>DOWN | LOW NOISE |       |
|-------------------|-------------|--------------|-----------|-------|
|                   | (L1)        | (L2)         | (L3)      | (L4)  |
| LOW NOISE<br>MODE | 0           | 0            | 0         | Blink |

(4) Press [ENTER] switch (SW4).

|                        | TEST<br>RUN | PUMP<br>DOWN | LOW NOISE |      |  |  |
|------------------------|-------------|--------------|-----------|------|--|--|
|                        | (L1)        | (L2)         | (L3)      | (L4) |  |  |
| LOW NOISE<br>MODE      | 0           | 0            | 0         | •    |  |  |
| Sign " ● " : Lights on |             |              |           |      |  |  |

(5) Press [SELECT] switch (SW3), and adjust LED display as shown in below figure.

|                                | PEAK CUT |       |       |
|--------------------------------|----------|-------|-------|
|                                | (L5)     | (L6)  | (L7)  |
| Level 1 Rated noise value -2dB | 0        | 0     | Blink |
| Level 2 Rated noise value -4dB | 0        | Blink | 0     |

(6) Press [ENTER] switch (SW4) and fix it.

|                                | PEAK CUT |      |      |
|--------------------------------|----------|------|------|
|                                | (L5)     | (L6) | (L7) |
| Level 1 Rated noise value -2dB | 0        | 0    | •    |
| Level 2 Rated noise value -4dB | 0        |      | 0    |

- (7) Return to "Operating status display (Normal operation)" by pressing [EXIT] switch (SW5).
- In case of missing how many times [SELECT] and [ENTER] switch are pressed, restart from the beginning of operation procedure after returning to "Operation status display (normal operation)" by pressing the [EXIT] switch once.

#### PEAK CUT MODE

LED display part



- (1) Switch to "Local setting mode" by pressing [MODE] switch (SW2) for 3 seconds or more.
- (2) Confirm (POWER / MODE) blinks 9 times, and press [ENTER] switch (SW4).

| POWER               | ERROR | TEST<br>RUN | TEST PUMP<br>RUN DOWN |      | IP LOW NOISE |      | PEAK CU | Г    |
|---------------------|-------|-------------|-----------------------|------|--------------|------|---------|------|
| MODE                |       | (L1)        | (L2)                  | (L3) | (L4)         | (L5) | (L6)    | (L7) |
| Blinks<br>(9 times) | 0     | 0           | 0                     | 0    | 0            | 0    | 0       | 0    |

Sign " <sub>O</sub> " : Lights off

(3) Press [SELECT] switch (SW3), and adjust LED display as shown below. (Current setting is displayed)

|                  | TEST<br>RUN | PUMP<br>DOWN | LOW NOISE |      |
|------------------|-------------|--------------|-----------|------|
|                  | (L1)        | (L2)         | (L3)      | (L4) |
| PEAK CUT<br>MODE | 0           | 0            | Blink     | 0    |

(4) Press [ENTER] switch (SW4).

|                        | TEST<br>RUN | PUMP<br>Down | LOW NOISE |      |  |
|------------------------|-------------|--------------|-----------|------|--|
|                        | (L1)        | (L2)         | (L3)      | (L4) |  |
| PEAK CUT<br>MODE       | 0           | 0            | •         | 0    |  |
| Sign " ● " : Lights on |             |              |           |      |  |

(5) Press [SELECT] switch (SW3), and adjust LED display as shown in below figure.

|                           | PEAK CUT |       |       |
|---------------------------|----------|-------|-------|
|                           | (L5)     | (L6)  | (L7)  |
| 0% of rated input ratio   | 0        | 0     | Blink |
| 50% of rated input ratio  | 0        | Blink | 0     |
| 75% of rated input ratio  | 0        | Blink | Blink |
| 100% of rated input ratio | Blink    | 0     | 0     |

(6) Press [ENTER] switch (SW4) and fix it.

|                           | F    | PEAK CUT |           |  |  |
|---------------------------|------|----------|-----------|--|--|
|                           | (L5) | (L6)     | (L7)      |  |  |
| 0% of rated input ratio   | 0    | 0        | $\bullet$ |  |  |
| 50% of rated input ratio  | 0    |          | 0         |  |  |
| 75% of rated input ratio  | 0    |          |           |  |  |
| 100% of rated input ratio |      | 0        | 0         |  |  |

- (7) Return to "Operating status display (Normal operation)" by pressing [EXIT] switch (SW5).
- When pressed number is lost during operation, restart from the beginning of operation procedure after returning to "Operation status display (normal operation)" by pressing the [EXIT] switch once.

## 16. OPTIONAL PARTS

| Exterior | Parts name              | Model No.  | Summary  |
|----------|-------------------------|------------|--|
|          | External connect<br>kit | UTY-XWZXZ2 | Use to operate the External input<br>and output function of Outdoor<br>unit. |