





**Ducted/Wall Mounted
Installation,
Service, Maintenance
and Troubleshooting**



Contents

- ❖ R32 Split Ducted/Wall mounted Units Installation, Servicing & Maintenance Method Statement.
- ❖ R32 Wal Mounted & ducted unit Startup procedure.
- ❖ R32 O-General Split Units Service.
- ❖ R32 Troubleshooting Checklist



R32 Inverter O-General
Split Units Service



New Split unit R32 Type A/C



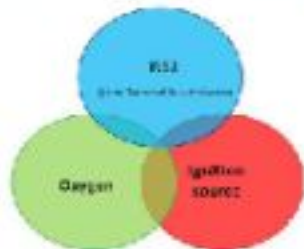
ASGH/ARGG-18F / 24F / 30F / 36F / 48F / 60F



01 Installation safety precaution

1. Installation safety precaution

The basic installation work procedures are the same as conventional refrigerant (R410A, R32) models. However, pay careful attention during installation!



Even if R32 refrigerant is lower flammability, when it leaks as air, it is the possibility that R32 might be ignited and combusted.

This type of the flare nut is used only in indoor units, but is not in the outdoor unit.

01 Installation safety precaution

1. Installation safety precaution

- No ignition source — Make sure that no any ignition source to be present surrounding work place during installation.



01 Installation safety precaution

1. Installation safety precaution

Indoor unit flare nut:


The cracking-proof flare nut is used to secure pipe connection of the indoor unit and the hoses as it serves to release water to prevent ice being formed and cracked as a safety measure for rooms.



02 Tools and material for R32

2.1 General Tools

As pressure of R32 approximately 1.6 time higher than R22 and can't be measured with R22 gauge. To prevent the mixing of the refrigerant the port diameter has changed.

Tools and Materials	R32
Gauge manifold and charge hose 	Same as R410A tool (The tool that compatible with R32 refrigerant is recommended)



02 Tools and material for R32

2.1 General Tools

Tools and Materials	R32
<p data-bbox="127 401 493 429">The other tool for installation</p> 	<ul data-bbox="627 445 909 631" style="list-style-type: none">• Flare tool• Torque Wrench• Pipe bender• Pipe Cutter• Gas leak detector• Weight Scale etc. <p data-bbox="940 445 1301 652">} √ Same as R410A tool</p>
<p data-bbox="127 808 243 870">Vacuum pump</p> 	<p data-bbox="642 818 1317 927">√ Conventional (Same as R410A tool) (The tool that compatible with R32 refrigerant is recommended)</p>

02 Tools and material for R32

2.1 General Tools

OUTLOOK	NAME	OUTLOOK	NAME
	Copper pipe cutter		Expander
	Copper pipe bender		Pressure gauge
	Flaring tool		6-8 CFM Vacuum pump

02 Tools and material for R32

2.1 General Tools

OUTLOOK	NAME	OUTLOOK	NAME
	Copper fittings		Clamp Meter
	Nitrogen Cylinder		Electric Drill
	Allen key set		Manual Hydraulic Crimper

02 Tools and material for R32

2.1 General Tools

Tools and Materials	R32
Braze tools 	Conventional (Same as R410A) ✓
Materials for installation 	Conventional (Same as R410A) ✓
Flare nut (Indoor unit)	For R32 Accessory   -444210002
Flare nut (For Outdoor unit)	

02 Tools and material for R32

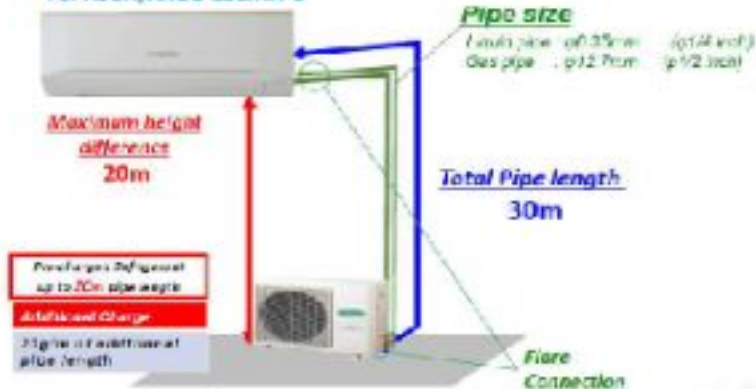
2.2. Refrigerant

Tools and Materials	R32	R410A
Service refrigerant cylinder Refrigerant correction cylinder	 Liquid filling, Gas filling	 Liquid filling

03 Copper piping

3.1. Piping Limitation & Pipe Size

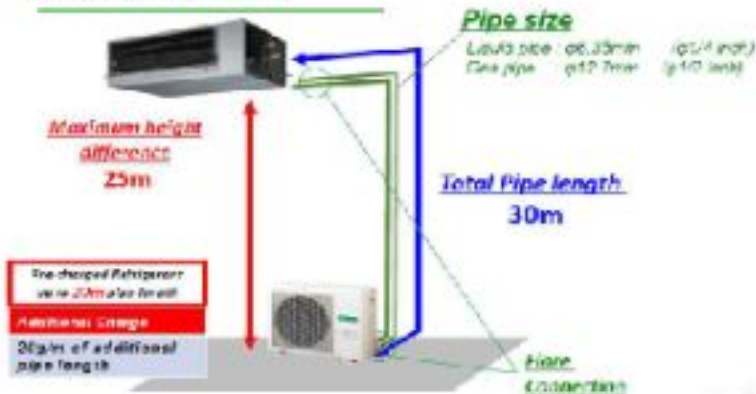
For ASGH/ARGG-18CXTA-U



03 Copper piping

3.1. Piping Limitation & Pipe Size

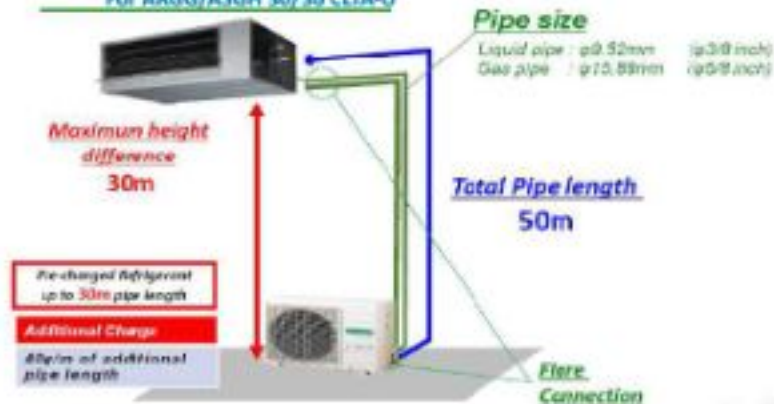
For ARGG/ASGH 24CLTA-U



03 Copper piping

3.1. Piping Limitation & Pipe Size

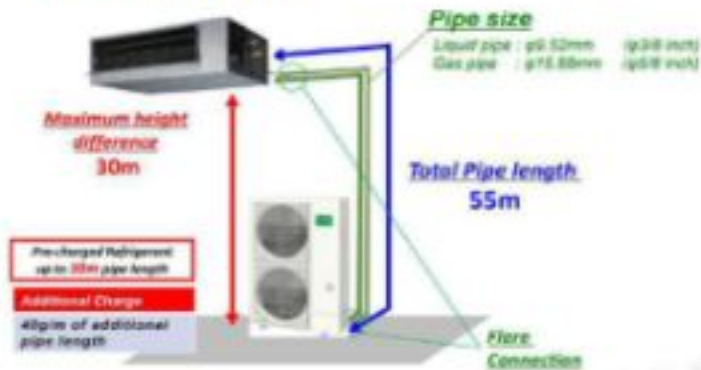
For ARGG/ASGH 30/35 CLTA-U



03 Copper piping

3.1. Piping Limitation & Pipe Size

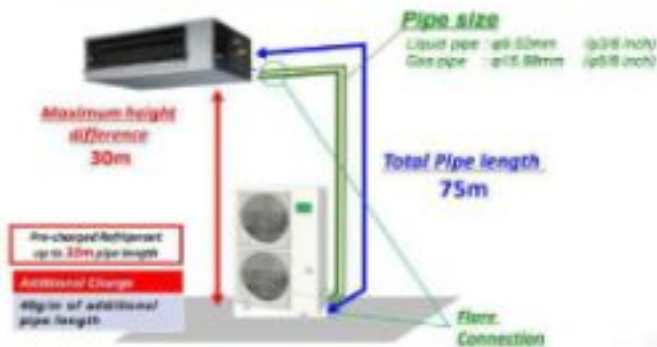
For ARGG/ASGH 48 CLTA-U



03 Copper piping

3.1. Piping Limitation & Pipe Size

For ARGG/ASGH 60 CLTA-U



04 Refrigerant Charge













4.1 Pipe Length and refrigerant charge Summary

AC Capacity	Piping Limitation and refrigerant charge amount			
	Total Pipe Length	Height Difference	Factory Pre Charge Pipe Length 12 & 24: 10kg±20% 30 & 60: 5kg±20%	Additional Charge
ASGH/ARGG-18	30m	20m	100g	20 g/m
ASGH/ARGG-24	30m	25m	1,270g	
ASGH/ARGG-30	50m	30m	16,00g	
ASGH/ARGG-36	50m	30m	17,00g	40 g/m
ARGG-48	55m	30m	3000g	
ARGG-60	75m	30m	3500g	40 g/m

05 Installation Work

5.1 Accessories for wall mounted unit







The following installation accessories are supplied. Use them as required.

Name and Image	Qty	Name and Image	Qty
Standard bracket 	1	Filler cover 	1
Specialized bracket 	1	Twist-in wall screw 	4
Specialized screw (Tilt/rotate) 	1	Twist-in wall screw 	2
Round connector 	1	Pin 	1
Round connector holder 	1	Pin, fixed holder 	1
Lock key 	1	Locking key 	1

05 Installation Work

5.1 Accessories for Ducted unit

The following installation accessories are supplied. Use them as required.

Name and Stage	Qty	Description
Operation manual 	1	
Specifications manual 	1	
Installation manual (This manual) 	1	
Spacer nut A (large flange) 	4	
Spacer nut B (small flange) 	4	For suspending the indoor unit from ceiling.
Washer 	8	

05 Installation Work

5.1 Accessories for Ducted unit

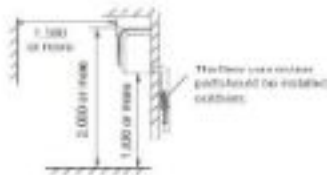
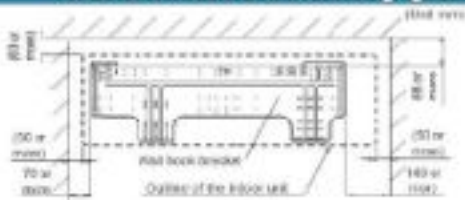
The following installation accessories are supplied. Use them as required.

Coupler head insulation (large)		1	For indoor side pipe (Ø44 pipe)
Coupler head insulation (small)		1	For indoor side pipe (Ø34 pipe)
Cable tie (large)		4	For long remote cable
Cable tie (medium)		1	For long remote outdoor cable
Cable tie (small)		1	For long remote cable after cable
Drain hose insulation		1	Insulates the drain hose and air flow
Drain hose		1	For installing drain pipe (1/2" (1.27) ID, 1.27)
Wash Band		1	For installing drain hose

05 Installation Work

5.1 Accessories

Keep the distance between the wall hook bracket or indoor unit to the surrounding walls as indicated in the following figure.



05 Installation Work

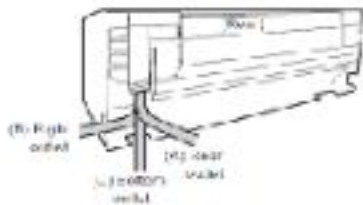
5.2 Selecting an installation location

Decide the mounting position with the customer as follows:

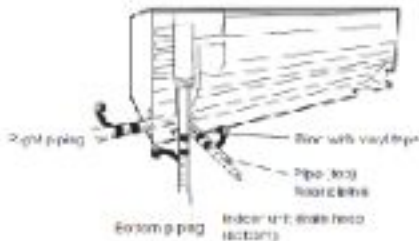
- Install the indoor unit level on a strong wall which is not subject to vibration.
- The inlet and outlet ports should not be obstructed: the air should be able to blow all over the room.
- Install the unit with a dedicated electrical branch circuit.
- Do not install the unit where it will be exposed to direct sunlight.
- Install the unit where connection to the outdoor unit is easy.
- Install the unit where the drainpipe can be easily installed.
- Take servicing, etc. into consideration and leave the spaces.

05 Installation Work

5.3 Indoor unit piping direction



1.1 Drainpipe

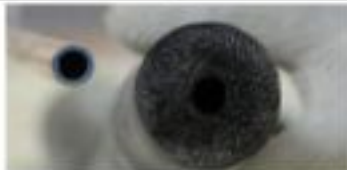


05 Installation Work

5.3 Indoor unit piping

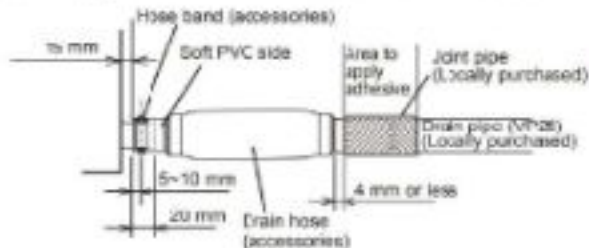
- Insulation material should have suitable diameter and thickness for the refrigerant piping.
- Insulation at joints can be fixed after leakage test.

Pipe outer diameter (mm)	Minimum insulation thickness (mm)
Φ6.35 - 12.7	15
Φ15.9	20



05 Installation Work

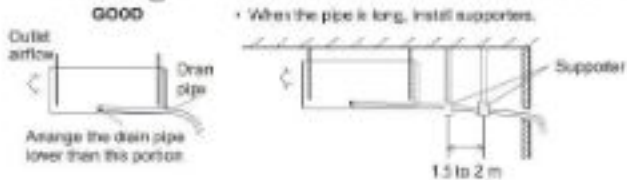
5.4 Installing the drain hose for Ducted unit



1. Install the drain hose (accessories) to the drain part of the indoor unit. Attach the hose band around the hose within the dimension shown. Secure firmly with the hose band.
2. Attach the drainpipe (locally purchased). Use general hard polyvinyl chloride pipe (VF25) [outside diameter 32 mm] and connect it with adhesive [polyvinyl chloride] so that there is no leakage.
3. Check the drainage.
4. Wrap the drain hose insulation around the drain hose connection.

05 Installation Work

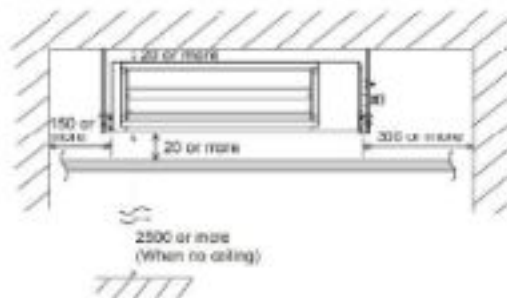
5.4 Installing the drain hose for Ducted unit



Install the drain pipe with downward gradient [1/50 to 1/100] and so there are no rises or traps in the pipe.

05 Installation Work

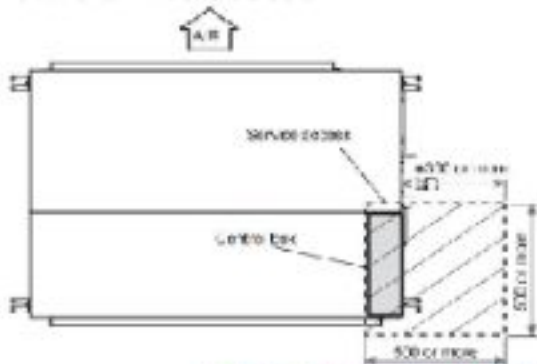
5.5 Installation dimension for Ducted unit



Model	Dimension (mm)		
	A	B	C
18Q4-00	1000	1040	1100
26	1400	1440	1500

05 Installation Work

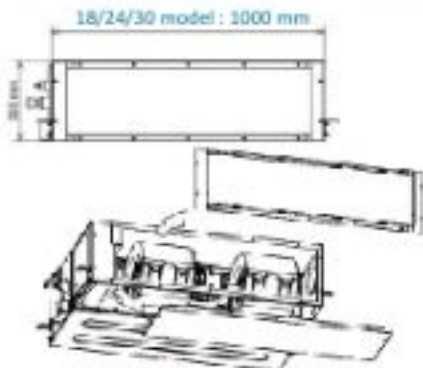
5.6 Service access



The service access necessary for the motor fan and filter maintenance.

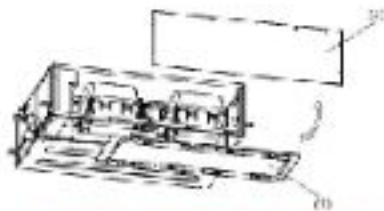
05 Installation Work

5.7 Intake duct connection



The air inlet duct can be changed by replacing the intake grille and service panel.

36 model : 1400 mm



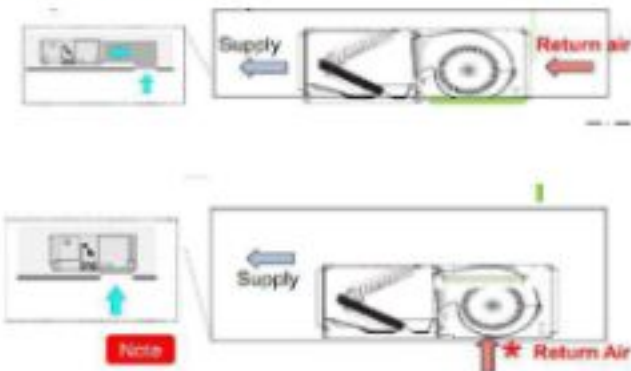
For the bottom air intake, position (1) the intake grille, and (2) the service panel, as shown in the following figure. (The factory setting is back air intake.)

05 Installation Work

5.7 Intake duct connection

DB might increase. (+1 to 3dB) *

The bottom air intake position is NOT suitable for a quiet room



05 Installation Work

5.7 Intake duct connection

Model 60 Maintenance work for the Fan and Motor can be made from both top & bottom side.



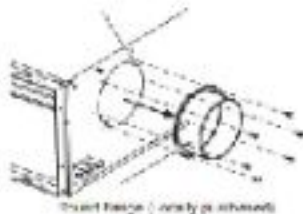
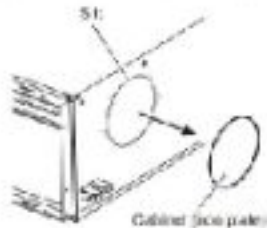
From top side
(Remove top panel)



From bottom side
(Remove service panel)

05 Installation Work

5.8. Fresh air intake

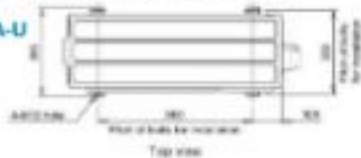


- When removing the cabinet (iron plate), be careful not to damage the indoor unit internal parts and surrounding area (outer case). When processing the cabinet (iron plate), be careful not to injure yourself with burrs, etc.
- When using the Fresh air intake, set the Room temperature sensor switching (Aux.) to "Wired Remote Controller" (01), or to use the Remote sensor.

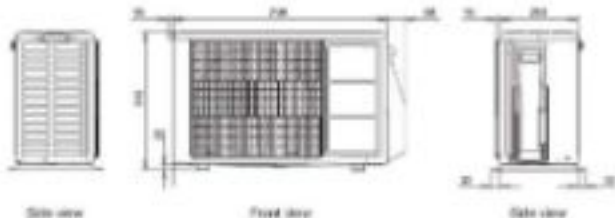
05 Installation Work

5.9 Outdoor unit Installation

For ASGH18/24-CXTA-U



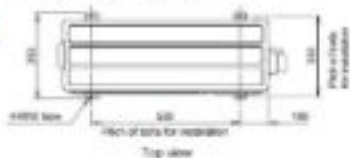
Unit: mm



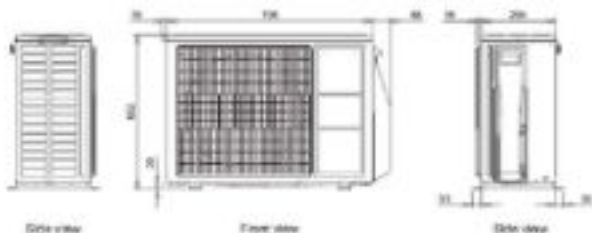
05 Installation Work

5.9 Outdoor unit Installation

For ASGH30/36-CXTA-U



Unit: mm



05 Installation Work

5.9 Outdoor unit Installation

For ASGH18-CXTA-U

Unit: mm

[INV]



[Non-INV]



05 Installation Work

5.9 Outdoor unit Installation

For ASGH18-CXTA-U

Unit: mm

[Inv]



[Non-INV]



05 Installation Work

5.9 Outdoor unit Installation

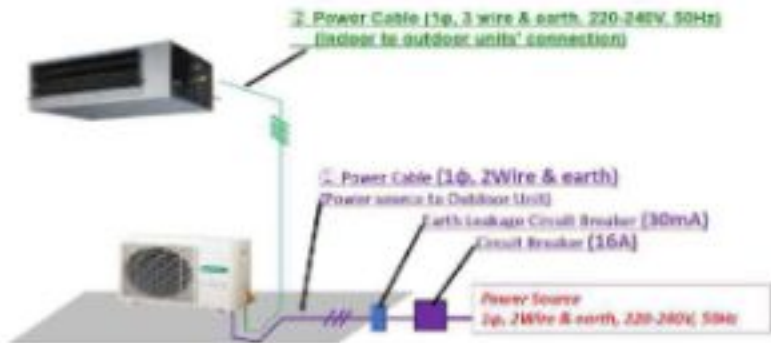
Antivibration Rubber Pad



06 Electrical Wiring

6.1 Wiring confirmation (Indoor to Outdoor)

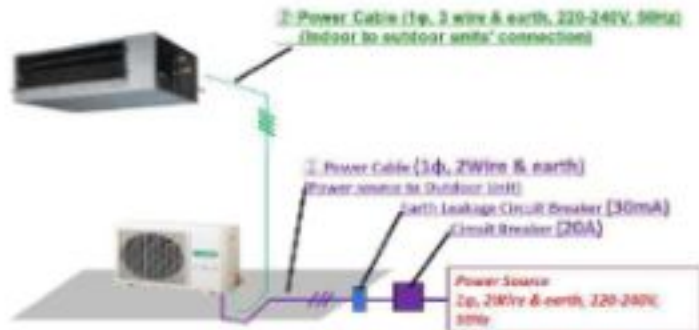
For ASGH/ARGG-1B- models



06 Electrical Wiring

6.1 Wiring confirmation (Indoor to Outdoor)

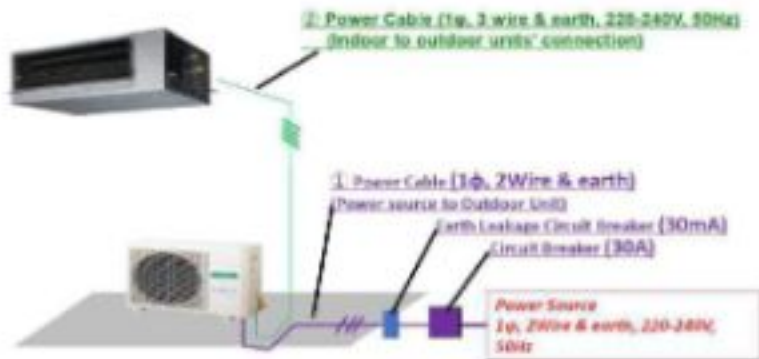
For ASGH/ARGG-24- models



06 Electrical Wiring

6.1 Wiring confirmation (Indoor Outdoor)

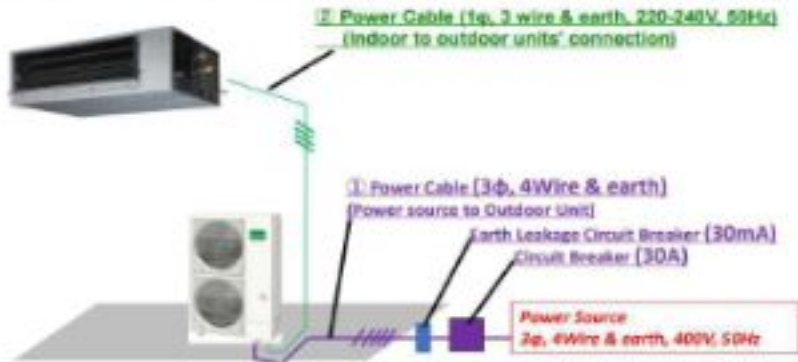
For ASGH30/36-CXTA-U models



06 Electrical Wiring

6.1 Wiring confirmation (Indoor Outdoor)

For ASGH/ARGG-48/60 models

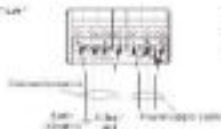
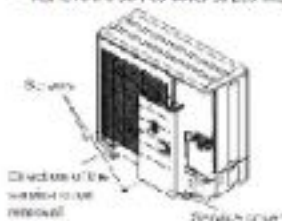


06 Electrical Wiring

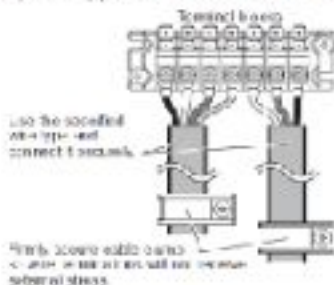
6.2 Wiring confirmation (Outdoor unit)

For ASGH/ARGG-30/36 models

- Remove the top cover screws (4 pieces)
- Remove the cover by pushing downwards.



- (2) Connect the power supply cable and the communication cable to the terminal block.
- (3) Check the power supply cable and the communication cable with a cable tester.



06 Electrical Wiring

6.3 Electrical requirement (Outdoor unit)

Power Source & Cable Specification (R410 vs R32)

Model	Circuit Breaker		power supply cable		Power source		Max. Operating current	
	R32	R410	R32	R410	R32	R410	R32	R410
18KBTU	30A (10)	30A (30)	1.5 mm ²	3 mm ²	18, 220V - 240V, 50Hz (2w - 4w/2w)	18, 220V - 240V, 50Hz, (2w - 4w/2w)	9.0A	11.5A
24(25)KBTU	30A (10)	30A (30)	2.5 mm ²	3.5 mm ²			11.5A	15.7A
30KBTU			4 mm ²	4 mm ²			14.5A	21.0A
36KBTU	30A (10)		4 mm ²				17.5A	23.5A
48(50)KBTU	30A (30)	30A (30)	1.5 mm ²	4 mm ²	24, 400V - 480V, 50Hz, (1w - 4w/2w)	24, 400V - 480V, 50Hz, (1w - 4w/2w)	10.8	14.0A
48KBTU	30A (30)		2.5 mm ²				12.6	16.5A

Ducted Only

NOTE: For electrical work & cable size, follow the local rules as well

06 Electrical Wiring

6.4 Electrical requirement (Indoor unit)

Model	Conductor Cable	Network	Main Circuit Breaker (A)	Earth Leakage Breaker (mA)
18	1.5 mm ²	3 wire + Earth (Ground) 1 Φ 230 V Type 6R245 IEC57	18	30
24			25	
30	30			
36	30			
48	30			
60	30			

NOTE: For electrical work & cable size, follow the local rules as well

06 Electrical Wiring

6.5 Signal Transmission (ON-OFF DX-System) As a Reference



06 Electrical Wiring

6.5 Signal Transmission (Inverter-System)



Serial communication

Indoor to Outdoor

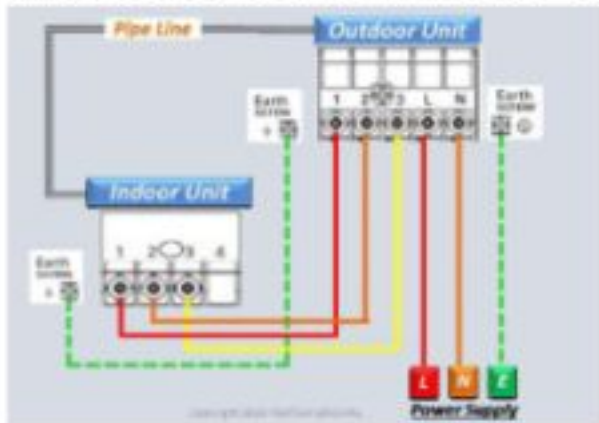
Serial communication

Outdoor to Indoor

- > Operating mode
- > Room temperature
- > Outdoor temperature
- > Required capacity (COMP rpm)
- > Operating condition (Error info.)
- etc...

06 Electrical Wiring

6.4 Wiring Method overview (Inverter -System)



06 Electrical Wiring

6.5 Controller

MODEL	FOR NAME	MODEL NO.	FEATURE
	Wireless controller	UTY-1NPG2	Easy finger touch operation with LCD panel. Backlit LCD with touch operation in a dark room. Built-in power transistor driver
	Wireless controller	UTY-1B002	High visibility and easy operation from far position can be achieved by controlling using the built-in strobe device. Built-in power transistor driver
	Compact wired remote controller	LTY-1NCR02	Compact body and easy operation. Flicker-free position can be achieved by controlling using the built-in strobe device. Built-in power transistor driver



NOTES: Available functions may differ by the remote controller. For details, refer to the operation manual.
When using a Wireless LAN adapter, group controlling system of the wired remote controller is prohibited.

06 Electrical Wiring

6.6 Bad Wiring

Indoor unit



Use the appliance tags to sandwich the power cable

Out door unit



Earthing Line Missing

06 Electrical Wiring

6.6 Caution Point for wiring work



Prohibited



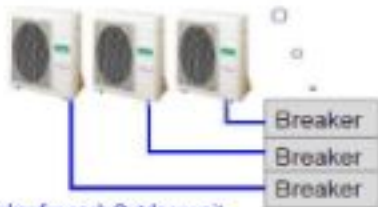
06 Electrical Wiring

6.6 Caution Point for wiring work



Do not connect by series wiring!

Good design

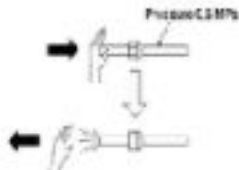
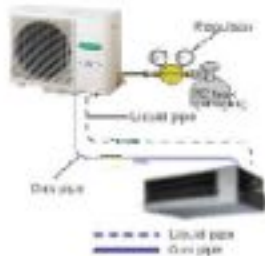


Separate Breaker for each Outdoor unit

07 Pre-commissioning

7.1 Flushing

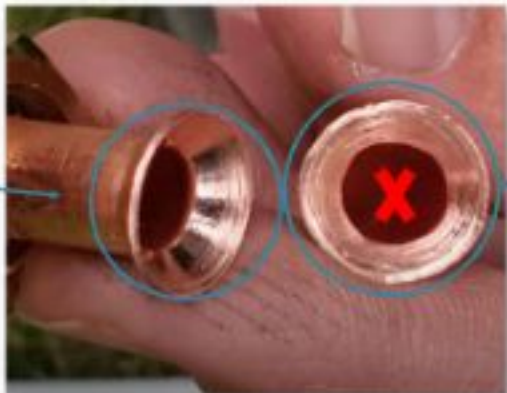
- Flushing refrigerant pipe with nitrogen after completing piping work and before ID flare connection.
 - Flushing from the Outdoor unit to the Indoor unit.
- < Keep the pipe dry and clean >
- Two major benefits of flushing:*
- Removal of foreign particle might be left in the pipe during installation
 - Verification of connections between indoor & outdoor piping system (No blockages)



07 Pre-commissioning

7.2 Flare Connection

Proper Flare nut.
No deformation.



Marks, Scratches
and deformation.

Use special pipe cutter and flare tool designed for R410A
or R32 pipework.

07 Pre-commissioning

7.2 Flare Connection

Is it recommended to use Teflon tape?



Using a Teflon tape is not recommended at the male thread. Is it going to void a leak?

You may use Teflon tape on the dead nut.



The way of leak is through the nut



07 Pre-commissioning

7.2 Flare Connection



Refrigerant pipes- flare tight with wrench torque



07 Pre-commissioning

7.3 Pressure testing



Pressure Test

Step-1: Connect the GAUGE MANIFOLD

*Step-2: Pressurize Pipe line & Indoor unit by NITROGEN
(up to 4.0MPa (4.0bar or 58psi))*

*Step-3: Keep it for
(0.5 to 2.0 hours)*

Step-4: Check the leakage from the joint.

Note:

When the outdoor air temperature changes 5°C, the test pressure changes 0.05MPa

(Record the Pressure & Temperature values at the beginning of pressure test)

08 Documentation prior startup

1.1 Installation supervision report

Installation supervision activities by Taqeef team is mandatory prior T&C request



08 Documentation prior startup

1.2 Selection

DAMAC LAGOONS PHASE 3 (96 NOS. OF VILLAS) Dubai

UNIT		LOCATION	OUTDOOR TEMP °C	Indoor Temp		APPROX SPEED	GWP (kg)	SPLIT		INDOOR RT	COOLING PERFORMANCE AT ICE MELT W/ CONDENS			EER @ 27°C	EER @ 35°C	AP-17 Grade
TYPE	SIZE			DRY BULB °C	WET BULB °C			INDOOR	OUTDOOR		Yp	Ypw	Yt			
4 & 5 BDR																
Chiller	Water	CHILLER ROOM, ROOF	18	21	24	Medium	30	MTT-20WRT(2)	RC1238-20WRT(2)	4	1.28	1.34	30	30	30	01
Chiller	Water	CHILLER ROOM	18	21	24	Medium	30	MTT-20WRT(2)	RC1238-20WRT(2)	11	1.67	1.71	30	30	30	04
Chiller	Water	CHILLER	18	21	24	Medium	30	MTT-20WRT(2)	RC1238-20WRT(2)	22	1.80	1.81	30	30	30	02
Wall Mounted	Water	MAST ROOM	24	21	24	Medium	30	SPLIT CHILLER		1	1.46	1.56	30	-	-	-
Chiller	Water	MAST ROOM	18	21	24	Medium	30	MTT-20WRT(2)	RC1238-20WRT(2)	2	1.50	1.50	30	30	30	01
Chiller	Water	RECREATION PLAZA, 5/F	18	21	24	Medium	30	MTT-20WRT(2)	RC1238-20WRT(2)	2	1.50	1.50	30	30	30	01
Chiller	Water	RECREATION	18	21	24	Medium	30	MTT-20WRT(2)	RC1238-20WRT(2)	2	1.50	1.50	30	30	30	01
Chiller	Water	RECREATION	18	21	24	Medium	30	MTT-20WRT(2)	RC1238-20WRT(2)	2	1.50	1.50	30	30	30	01

08 Documentation prior startup

1.2 Selection

Penthouse at Aykon Tower C, plot: 3460164, Business Bay, Dubai

UNIT NO.	UNIT TYPE	LOCATION	FEATURES				AREA	BEDROOMS	BATHROOMS	FINISHES			VIEW/OUTLOOK
			FLOOR FINISHES			WALL				KITCHEN	BATH	LIVING	
			FLOOR	WALL	CEILING								
PENTHOUSE	PH101	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH102		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH103		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH104	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH105		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH106	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH107		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH108	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH109		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH110	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH111		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH112	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH113		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH114	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH115		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH116	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH117		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH118	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH119		10	10	10	1	APARTMENT	2	200	300	300	100	
PENTHOUSE	PH120	PENTHOUSE	10	10	10	1	APARTMENT	2	200	300	300	100	

08 Documentation prior startup

1.2 Selection

Penthouse at Aykon Tower C, plot: 3460164, Business Bay, Dubai

UNIT NO.	UNIT TYPE	LOCATION	FEATURES				AREA	STATUS	PRICE	PER SQ. FT.	TOTAL PRICE	TOTAL AREA	TOTAL PRICE PER SQ. FT.
			FLOOR AREA			BATH							
			FLOOR	AREA	PRICE								
PENTHOUSE	PH-01	PENTHOUSE	21	1.1	50	4	APPROXIMATE	2	400	800	800	0.12	
PENTHOUSE	PH-02		22	1.2	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-03	PENTHOUSE	23	1.3	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-04		24	1.4	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-05	PENTHOUSE	25	1.5	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-06		26	1.6	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-07	PENTHOUSE	27	1.7	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-08		28	1.8	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-09	PENTHOUSE	29	1.9	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-10		30	2.0	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-11	PENTHOUSE	31	2.1	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-12		32	2.2	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-13	PENTHOUSE	33	2.3	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-14		34	2.4	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-15	PENTHOUSE	35	2.5	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-16		36	2.6	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-17	PENTHOUSE	37	2.7	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-18		38	2.8	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-19	PENTHOUSE	39	2.9	55000	4	APPROXIMATE	3	400	800	800	0.12	
PENTHOUSE	PH-20		40	3.0	55000	4	APPROXIMATE	3	400	800	800	0.12	

09 Start-up sequence

1.1 Commissioning Tools

Outlook	Name	Outlook	Name
	Micron Gauge		HVAC hoses
	Pressure gauge		8 cfm Vacuum pump

09 Start-up sequence

1.1 Commissioning Tools

Outlook	Name	Outlook	Name
	Laser Thermometer		Voltage and Current Meter
	Digital Weighing Scale		Fluke 971 Temperature Humidity Meter

09 Start-up sequence

1.2 Dry Vacuum

When reached 500 Micron stop the pump and wait **10 to 15 minutes**.



09 Start-up sequence

1.3 Addition Refrigerant charge

Add refrigerant once the pipes exceed 20m for models 18/24 and 30m for model 30/36/60

A/C Capacity	Refrigerant Charge (g)	
	Standard Charge (20m pipe length)	Additional Charge (Above 20m pipe length)
ARQG18CLTA	800g	20 g/m
ARQG24CLTA	1,270g	
ARQG30CLTA	11,200g	
ARQG36CLTA	17,200g	40 g/m
AFGG48CMT	33,200g	
AFGG60CMT	45,200g	



Refrigerants brands shall be either UK Italy or USA. Example: Honeywell, Freon Chemours, REFRIX.

09 Start-up sequence

1.4 Before Power On

Check List

- ✦ Is the outdoor unit securely installed?
- ✦ Have you performed gas leakage test?
- ✦ Connection joints of pipes with heat insulation done completely?
- ✦ Is the water discharging from drain without any problems?
- ✦ Are the cables connected correctly?
- ✦ Are the cables as per specifications?
- ✦ Is the earth (ground) wire connected accurately?
- ✦ Are there any obstacles blocking the suction gate, and outlet of the indoor/outdoor units?
- ✦ Have you filled the specified amount of refrigerant?
- ✦ Are the stop valves of gas pipe and liquid pipe fully open?
- ✦ Has the power been supplied to crankcase heater for more than 6 hours?

09 Start-up sequence

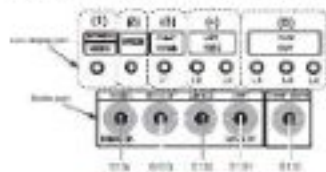
1.4 After Power ON

Operate the unit and check the running parameters. Keep running the unit for a minimum of 48hours.

Then test run can be performed in the following two ways:

1. Set with test operation by function setting F-2-09 available in the remote controller.
2. Cooling operation can be set using Outdoor unit button (S133) by select & enter button. (S132) available on the board of ODU display.

(Make sure to perform the first test operation with cooling operation.)



Outdoor unit display board

Item No.	Setting Item
05	8.2.1. Error details
01	8.2.2. version
05	8.2.3. Test run
16	8.2.4. Indoor unit address verification
11	8.2.5. Check the indoor unit position
19	8.2.6. Initialization

Wired remote function setting

09 Start-up sequence

1.4 After Power ON

During the Test run operation check the following points

- **Refrigerant pressure** —

- Suction pressure → 120 ~ 140 PSI
- Liquid line pressure → 200 ~ 250 PSI

- **On coil/Off coil temperature** —

$\Delta T > 8^{\circ}\text{C}$

- **Maximum operating current**—

- Rated & Maximum current mentioned on the rating name plate of ODU, is the readings value within the operation range.

- **Abnormal noise** —

- Indoor unit abnormal noise
- Outdoor unit abnormal noise

- **Drain water leakage** —

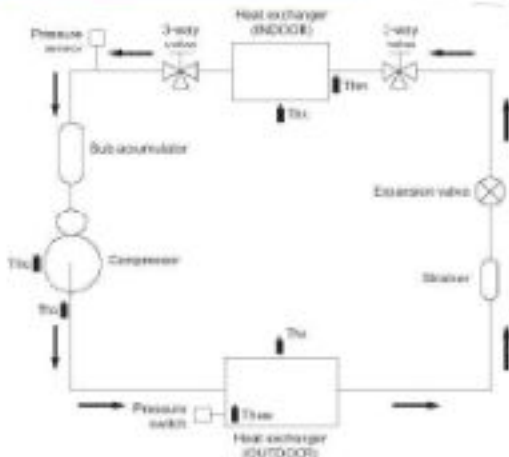
- Indoor unit leveling
- Drain hose connection
- Drain insulation

09 Start-up sequence

1.4 After Power ON

Refrigerant circuit Model:
ARGG48/50CLTA-U

- ThC Thermistor (Compressor temperature)
- ThD Thermistor (Discharge temperature)
- ThO Thermistor (Outdoor temperature)
- ThR Thermistor (Room temperature)
- ThM Thermistor (Heat exchanger middle)
- ThP1 Thermistor (Pipe temperature)



09 Start-up sequence

1.4 After Power ON

- Conduct a duct check.
- Check the ventilation drawing.
- Adjust the ESP setting to match the air flow design.



Model: ARGG30CLTA-U

09 Start-up sequence

1.4 After Power ON

- During the Test run operation check the air flow.
- Request an air balancing/Fan performance report then adjust the unit ESP accordingly through function setting F1-13-26 from the remote controller.

Different from Non-INV model

Function number	Setting range	Setting description	Factory setting
26	01	00 Pa	
	02	00 Pa	
	03	00 Pa	
	04	00 Pa	
	05	00 Pa	
	06	00 Pa	
	07	00 Pa	
	08	00 Pa	
	09	00 Pa	
	10	00 Pa	
	11	10 Pa	
	12	10 Pa	
	13	10 Pa	
	14	10 Pa	
	15	10 Pa	
	16	10 Pa	
	17	10 Pa	
20	Basic OFF		
21	2.0000000000000000	*	

Note: The Range of static pressure is different by model. If the static pressure is set above maximum range, the setting will be the same as the maximum.

09 Start-up sequence

1.4 After Power ON

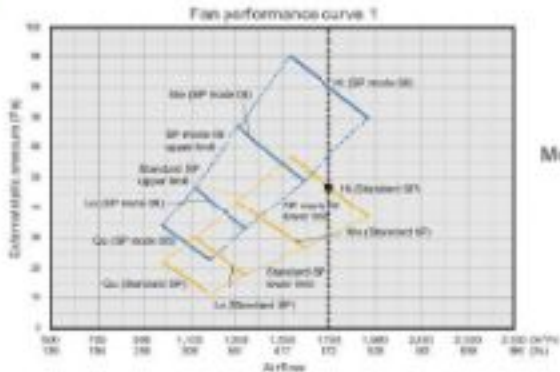
- Adjust the ESP Mode.



09 Start-up sequence

1.4 After Power ON

- Air flow vs External Static Pressure (Q-H curve)



09 Start-up sequence

1.5 Operation check

Gas pressure check
Suction pressure for R32 model

ITEM	SUCTION PRESSURE (PSIG)
FGL Split type (R32 model)	LP 110 (PSIG) to 150 (PSIG) HP 180 (PSIG) to 280 (PSIG)

09 Start-up sequence

1.5 Operation check

Outdoor unit running current



09 Start-up sequence

1.5 Operation check: On-Off Coil air-temperature



09 Start-up sequence

1.5 Operation check: ODU Intake / discharge Temp



T Intake air



Operation check

Check Point

T Discharge air

T intake air – T discharge air 5 to 10°C

09 Start-up sequence

1.6 Testing & commissioning report

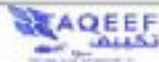
GENERAL Testing & Commissioning Report		TAQEEF L.L.L.L.C		
Site Name & Location: Townhouses 30 Villas at Al Safa First (Plot no. 9530400), Dubai				
Client: Engineering Office		MEP/Installer: Eastern International		
Unit Reference: Mockup Villa (FOU-2 GF)		Serving Area: F.F Living area		
Indoor Unit:	Model#	RQG48CMTA-U		
	Serial#	T06075		
Outdoor unit:	Model#	RQG48CRTA-U		
	Serial#	T06075 I		
Installation Check List Items		Yes	No	Notes
Outdoor unit installed with proper air circulation? No obstacle?		Yes		
Outdoor unit is fixed to the floor with bolts and a proper rubber pad?		Yes		
Indoor unit installed with proper hanging wires?		Yes		
Indoor unit description completed? Installed?		Yes		
Refrigerant pipe sizes are correct? Insulated? Thickness above 15mm.		Yes		LW & full inch insulation 15mm.
Flare nuts have been tightened properly with Torque wrench?		Yes		Hand tight
Pressure Test has been performed? Pipes Flushing?		Yes		yes for all R410A
All steel work completed? The indoor unit air filter is installed?		Yes		
Control wire and remote wire completed? Wires Spaced out Ok?		Yes		2 wires construction ok
Power Cable Extension? Disconnect switch & breaker Size Adeq?		Yes		6 Amp 20 A/30 Amp phase
System Vacuum completed? (The recharge the air will refrigerants?)		Yes		100 Micron

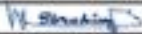
09 Start-up sequence

1.6 Testing & commissioning report

Test Run Parameters	Data	Notes
Record Power Supply Voltage!	400 V	Voltage range 380—415 V 3Ph -
Total Pipe length? Additional refrigerant? Service Valve are fully open?	Meters 10m pipes	No additional refrigerant is required
Record HPSLP Readings.	LP140 HP100 PSI	Working LP 110-140Psi
Record Running Amps	4.5 / 5.0 / 4.5 A	(Rated current 7.8 Amps)
Record Ambient Temperature	31 C	Delta T 5-10C
Record Condensing Air Out Temp.	38.3 C	
Record Room Temp/ ON coil Temp.	25.3 C	Delta T 8-12C
Record OFF Coil Temp./ Grill Temp.	12 C	

Comment: * Above Parameters are normal.



For Client	For Taqeef
Client Signature:	Technician Signature: 
Name & Date:	Name & Date: Ibrahim 26/12/2023

10 Service monitoring tool

1. Overview

UTY-ASSX is a service monitoring tool for Fujitsu General (FG) inverter air conditioners. It has 4 main functions:

- Operation Monitoring: For real-time data monitoring purpose
- Operation History display: Historical operation data monitoring purpose
- Protection Condition display
- Error History display: Historical error monitoring purpose



09 Service monitoring tool

2. Installation

To install the application, please follow the following steps

- Run setup.exe in the application folder. The program will be automatically installed. If it does not work, decompress MCP2200 Windows Driver and install it according to the attached instructions in the CD-ROM
- Once installed, use the icon to load the application. The file name is "Service Monitoring Tool"
- Turn off the power of ODU to avoid touching any live parts of the AC
- Connect the PC to the Outdoor unit's PCB via the Communication control box as shown below

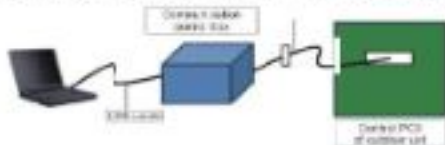


10 Service monitoring tool

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10 Service monitoring tool

3. Wiring details

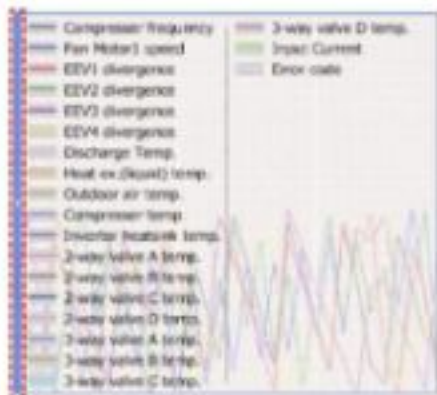


10 Service monitoring tool

4. Operating and monitoring data

These are the list of monitoring parameters

- ❑ Compressor frequency
- ❑ Fan Motor 1 speed
- ❑ EEV divergence (1, 2, 3 and 4)
- ❑ Discharge temperature
- ❑ Heat ex. (liquid) temperature
- ❑ Outdoor air temperature
- ❑ Compressor temperature
- ❑ Inverter heatsink temperature y
- ❑ 2-way valve temperature (A, B, C and D)
- ❑ 3-way valve temperature (A, B, C and D)
- ❑ Input current
- ❑ Error code



10 Service monitoring tool

4. Operating and monitoring

Establishing communication between the AC and the service tool

Start / Stop
Communication



10 Service monitoring tool

4. Operating and monitoring

Viewing outdoor and indoor unit measurements in real-time

The screenshot displays a software interface for monitoring HVAC units. At the top, there is a title bar with the text "Pultex Local Control Monitoring Tool (LSCM) - HVAC Unit Monitoring". Below the title bar is a menu bar with "File", "Communication", "Debug", "View", and "Window". A toolbar with various icons is located below the menu bar. Underneath the toolbar, there are four status indicators: "Outdoor" (red), "Fresh" (blue), "Return" (green), and "Other" (grey). The main area is divided into two columns of data tables.

Indoor Unit Measurements	
Compressor frequency	18.2 rpm
Fan Motor speed	498.0 rpm
EVJ (evaporator)	2.3.2 abs
Discharge Temp.	44.5 °C
Heat ex. (cond) temp.	-10.0 °C
Deliver. air temp.	25.0 °C
Compressor temp.	-10.0 °C
DC Voltage	331.0 V
Input Current	1.0 A
Errors	0.0

Outdoor Unit Measurements	
HEAT EX. (COND) AIR TEMP	5.0 °C
Room A temp.	23.5 °C
Room A Setpoint	20.0 °C

10 Service monitoring tool

5. Historical Operation Data Monitoring



10 Service monitoring tool

5. Historical Operation Data Monitoring



- Sync Multiple Graphs: Graphs are synchronized and are scrolled together when this icon is toggled On. Toggling it Off will not be synchronized and can be scrolled individually.
- "Auto Scroll": Once toggled, graphs will automatically scroll to the right.
- "Auto Scaling": When toggled, the scale of the vertical axis is automatically adjusted.
- "Multi-line": To switch between showing one graph and multiple graphs

10 Service monitoring tool

5. Historical Operation Data Monitoring

Navigation: Home Configuration Status Error History

Active and Measurements

Temperature (Celsius)	22.5
Temperature (Fahrenheit)	72.5
Humidity (%)	65
Power (Watt)	10.5
Voltage (V)	12.0
Current (A)	0.875
Power Factor	0.95
Frequency (Hz)	50

Error and Measurements

Error ID	Error Message	Error Date
1000001	Temperature sensor error	2023-10-27 10:00:00
1000002	Humidity sensor error	2023-10-27 10:05:00
1000003	Power sensor error	2023-10-27 10:10:00

Buttons: Get history, Save, Clear

Error history display

"Get history" pulls up all the errors that are saved in the internal memory of the AC. It includes errors that occurred before the service tool was connected as well. The error display can be saved into a file or deleted by "Save" and "Clear", respectively.

Conclusion

- Don't use the existing (For R22 & R410) flare nuts for R32 indoor unit.
- Use the tools (Manifold gauge, Vacuum pump) which compatible for R32 refrigerant.
- Pipe length limits have been improved from fixed speed units.
- Proper piping work as per recommendation enhances the machine performance and reliability
- Earth connection between Indoor & Outdoor unit is MUST.
- Electrical power must be from ODU to IDU. (No separate connection)



Service & Maintenance Method Statement



Purpose

To maintain The Performance of
The Split Units Air Conditioning
Units.

11 Service & Maintenance Method Statement

3.1 Servicing (half-yearly)

1. Servicing of indoor cooling coils with high pressure water.
2. Cleaning the drain tray/filter.
3. Flushing off the drain line.
4. Washing off the condensing unit.
5. Checking the voltage at the isolator.
6. Checking the controls supply.

11 Service & Maintenance Method Statement

7. Checking the gas pressure.
8. Checking all the electrical parts and loose contacts and tighten if required.
9. Checking all the safety controls/operations.
10. Checking all the leaks and oil traces.
11. Checking for any abnormal sound.
12. Record running parameters.
13. Record Outdoor unit current.

11 Service & Maintenance Method Statement

3.2 Operation check: Gas pressure check

Suction pressure for R32 model (wall type)

ITEM	SUCTION PRESSURE (PSIG)
FGL Split type (R32 model)	LP 180 (PSIG) to 140 (PSIG) HP 180 (PSIG) to 280 (PSIG)

11 Service & Maintenance Method Statement

3.3 Operation check: On-Off Coil air-temperature



Operation check

Check Point

$$T_{\text{return air}} - T_{\text{supply air}} \geq 8^{\circ}\text{C}$$

A close-up photograph of a metal mesh filter, likely from an air conditioning unit, with a blue semi-transparent overlay. The mesh consists of several parallel metal strips forming a grid pattern. The background is slightly blurred, showing more of the filter structure.

O-General Split Units
Troubleshooting
& Maintenance Checklist

A decorative geometric pattern in the bottom right corner, consisting of interlocking lines forming a complex, crystalline or floral-like structure. The pattern is light gray and set against a white background.

12 Error codes

Total of 28 error codes

Error display			Word remote controller error code	Explanation
OPERATION lamp (green)	TIMER lamp (orange)	POWERFUL lamp (green)		
●(1)	●(1)	◇	11	Serial communication error
●(1)	●(2)	◇	12	<ul style="list-style-type: none">• All indoor remote controller communication error• Server room control communication error
●(1)	●(5)	◇	15	Clock unit uninstalled Automatic airflow adjustment error
●(1)	●(2)	◇	16	Peripheral unit transmission PCB connection error
●(1)	●(5)	◇	18	External communication error

12 Troubleshooting checklist

ISSUE	POSSIBLE CAUSE	REMEDY	(✓)
Unit is not working.	No power.	Check the main voltage.	
	Blown control fuse.	replace the control fuse.	
Low Suction Pressure.	Blocked filter.	Clean the filter.	
	Gas Leak.	Rectify the leak & replace refrigerant.	
	Blocked drier/strainer.	Replace the filter of drier/strainer.	
Unit trips on Low Pressure (LP).	Low refrigerant.	Check for leak and rectify.	
	Closed suction valve.	Check service valve.	
	Defective LP switch.	Replace LP Switch.	
	Blocked drier/strainer/capillary.	Replace the filter of drier/strainer.	
	Indoor blower is not working.	Check blower motor.	
High Suction Pressure.	Overcharged gas.	Release some gas from the system.	
	Weak pumping of the compressor.	replace the compressor.	

12 Troubleshooting checklist

ISSUE	POSSIBLE CAUSE	REMEDY	(5)
High Discharge Pressure.	Overcharged gas.	Release some gas from system.	
	Non-condensable gas.	Vacuum and recharge fresh gas.	
	Blocked condenser.	Clean the condenser.	
	Slow condenser fan.	Check the fan capacitor or replace the fan motor.	
Unit trips on High Pressure (HP).	Faulty HP switch.	Replace the HP switch.	
	Blocked condenser.	Clean the condenser.	
	Closed discharge valve.	Check service valve.	
Suction low & Discharge High.	Blocked drier filter.	Remove the drier. (Not recommended)	
	Blocked expansion/capillary.	Replace/clean and flush the system.	
Outdoor unit won't start.	No power.	Check main power/breaker trip.	
	No control supply.	Check control wire for break up.	

12 Troubleshooting checklist

ISSUE	POSSIBLE CAUSE	REMEDY	(✓)
Outdoor unit immediately stopped.	Tripping on Low Pressure.	Less refrigerant and check for leak.	
	Tripping on High Pressure.	Blocked condenser, condenser fan not working.	
Unit is working but cooling is not (indoor & outdoor).	No gas/less gas in the system.	Check for gas leak and rectify.	
	Weak pumping of the compressor	Replace compressor.	
	Blocked expansion/capillary	Replace/clean.	
	Blocked system.	Flush the system and recharge.	
	Temperature was set high.	Reduce temperature setting.	
	The operation is in fan mode.	Change it to cool mode.	
	Area is too big.	Check unit capacity/tonnage.	
Outdoor is vibrating while running.	Loose mounting bolts.	Tighten the mounting bolts.	
	Mechanical problem on the compressor.	Replace the compressor.	
	Unbalanced condenser fan blade.	Replace the fan blade.	

Maintenance guideline



A. Purpose

- Minimizing incidental failure, prolonging use and decreasing running cost.
- The minimum frequency maintenance is calculated on a basis of 2000 running hours (90Days).
- Depending on difference working environment maintenance may be required sooner than the mention requirement.
- SAGEEF is urging to a quarterly, semi and annual preventive maintenance
- Minimum lifetime for moving parts 20,000 Running Hours
- Minimum lifetime for Electrical parts 25,000 Running Hours

B. Item To Be Checked

Semi-annual

- Check for vibration and noise.
- Clean indoor unit filter.
- Check and record air outlet of indoor unit.
- Check drainage for blockage
- Inspect electrical components. Blow dust if required.
- Clean condenser coil
- Check and record the running data.

Yearly

- Additional to the semi-annual task's clean evaporator coil.
- Run the system on test mode, evaluate and record running parameters.

Thank you.



DX-Split (ON-OFF) S&M Check Points

Date 1+ _____ **Contact details** 1+ _____
Country 1+ _____ **Customer's name** 1+ _____
Model 1+ _____ **Serial** 1+ _____

• Product Appearance

✓ Check whether screw loose, screw lost, gap generation or deformation. (Outdoor unit)	<input type="checkbox"/> YES <input type="checkbox"/> No	Remarks:
✓ Check whether the Outdoor Unit Side Panel broken or lost. (It may lead to PCB failure)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remarks:

• Heat Exchanger

✓ Check and Clean Condenser Coil.	<input type="checkbox"/> YES <input type="checkbox"/> No	Remarks:
✓ Check and clean the Fans (Outdoor Unit & Indoor Unit).	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remarks:
✓ Check and Clean Evaporator Coil	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remarks:
✓ Check and clean the Air filters. (Replaced if required)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remarks:
✓ Check the condition of insulation for Liquid & Gas pipeline.	<input type="checkbox"/> GOOD <input type="checkbox"/> DAMAGE	Remarks:

• Drainage System

Check and clean drain pan.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remarks:
Check and clean the U-Trap in the drain line.	<input type="checkbox"/> YES <input type="checkbox"/> No	Remarks:
Check the slope of the drain line. (Rectify if needed)	<input type="checkbox"/> Yes <input type="checkbox"/> NO	Remarks:
Check and clean condensate drain. (Rectify if needed)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remarks:
Check the operation of drain pump, if applicable.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remarks:

• PCB

✓ Check the indoor PCB "visually" and clean.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check the spark or scratch spot on indoor PCB "visually".	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check the outdoor unit PCB "visually", and clean. (if applicable)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check spark spot on outdoor Unit PCB "visually". (if applicable)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:

Note: - Important instruction toward PCB cleaning and reinstallation.

- Remove the accumulation of the dry dust and sand
- If wet dust has accumulated, remove it and allow it to dry, then take counter measure.
- After cleaning, make sure to dry completely before turning on the power

• Other Electrical Components

✓ Check capacitor. (Any deformation or hazardous leaks)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check the pressure switches.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check remote control's connection and sensor path.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check the compressor's running amperes.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check the condenser fan motor's running amperes.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check the magnetic contactor. (Is there any chattering or spark symptoms)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check the crank case heater. (Heater must be in normal operation)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Check the Thermistor resistance and room temperature. (Add the value in Remark column)	<input type="checkbox"/> YES <input type="checkbox"/> NO	Room Temperature: °C/ °F, Thermistor resistance: Ohm Remark:
✓ Check PCB's connections. Check whether it is installed properly, or removed due to any excessive wire pooling work.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Indoor unit DC motor showing any abnormal vibration.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:
✓ Outdoor unit DC fan motor (if applicable) showing any abnormal vibration.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark:

• Refrigerant Control Device and Leakage Symptoms

✓ Is there any Refrigerant Leakage symptom on the coils or pipe connections?	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....
✓ Check Refrigerant pressure (by Gauge Manifold) and input value.	High..... psi Low..... psi	Remark.....
✓ Add the refrigerant if insufficientKg	Remark.....

• Final inspection

✓ Inspect for interior cabinet contamination.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....
✓ Check for excessive vibration.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....
✓ Check service valve (3-way valve), make sure Allen screw is smooth.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....
✓ Check all electrical components for proper operation.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....
✓ Check ON & OFF Coil temperatures. (Add the value in Remark column)	<input type="checkbox"/> YES <input type="checkbox"/> NO	On coil.....°C/°F Off coil.....°C/°F Remark.....
✓ Check looseness of Terminal Screws on terminal box and retighten	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....
✓ Check all wire connection and replace as needed.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....
✓ Check looseness of screw tightness part and retighten	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....
✓ Check any scratch spot or pinching spot on the Wire.	<input type="checkbox"/> YES <input type="checkbox"/> NO	Remark.....

IMPORTANT HINTS

1. Off coil temperature
2. On coil temperature
3. Condenser fan motor
4. Out door's unit heat exchanger (Condenser coil)
5. 3 way valve /Service valve
6. Remote control sensor path



Important checking method >>>>

- **Checking compressor and condenser fan motor ampere:** - Running ampere should check by ampere meter of Compressor's starting or running winding during normal cooling operation made.
- **Refrigerant checking:** - check the suction pressure by using manifold gage and compare with previous sheet.
- **Capacitor checking:** - To test the capacitor with multi-meter, set the meter to read to high ohms range. Touch the meter leads to the corresponding leads on the capacitor, red to positive and black to the negative. The meter should start from zero and moves toward infinity.
- **Crank case heater:** - Check the crank case heater visually and continuity by using the multi-meter.
- **3Way valve:** - Check the tightness of the flare nut of the copper pipe connection and Allen screw.

Note: - The checking parameter does vary one to another based on the model/specification/type of the equipment. The obtained data in the check sheet does helps to comparing with previous or further data.

END

Protect your home with CoolProtect

The only worldwide AC service and maintenance program tailored for homes in MENA. **Preventive Top-up** – Fresh air-cleaning to the filters, coils.

AC performance can be affected by:

- 1. **Low** (Icon: Fan with red X)
- 2. **Leaks** (Icon: Water droplets)
- 3. **Low** (Icon: Mountains)
- 4. **Contaminants** (Icon: Cloud with rain)

Why do you need an AC maintenance package?

AC units need regular service and cleaning to:

- 1. **Prevent power fluctuations**
- 2. **Reduce noise**
- 3. **Increase quality**
- 4. **Extend the life of the product**
- 5. **Increase efficiency & life**
- 6. **Reduce air-borne odors**



1. **AC Unit
Service**



2. **Leakage
Detection and Fix**



3. **Replacement
of Filters & Coils**



4. **Professional
Installation
of Services**



5. **Security
Covered**

Package Options

Basic	Standard	Essential	VIP
<p>Home service: Full-service AC unit</p>	<p>Home service: Full-service AC unit including electrical wiring</p>	<p>Home service: Full-service AC unit including electrical wiring & internet setup</p>	<p>Home service: Full-service AC unit including electrical wiring for the unit & internet setup</p>
<p>AC unit type: Split</p>	<p>AC unit type: Split</p>	<p>AC unit type: Split</p>	<p>AC unit type: Split</p>
<p>Service fee: \$400</p>	<p>Service fee: \$500</p>	<p>Service fee: \$600</p>	<p>Service fee: \$700</p>
<p>1st year service fee: \$100</p>	<p>1st year service fee: \$150</p>	<p>1st year service fee: \$200</p>	<p>1st year service fee: \$250</p>
<p>2nd year service fee: \$100</p>	<p>2nd year service fee: \$150</p>	<p>2nd year service fee: \$200</p>	<p>2nd year service fee: \$250</p>
<p>3rd year service fee: \$100</p>	<p>3rd year service fee: \$150</p>	<p>3rd year service fee: \$200</p>	<p>3rd year service fee: \$250</p>
<p>4th year service fee: \$100</p>	<p>4th year service fee: \$150</p>	<p>4th year service fee: \$200</p>	<p>4th year service fee: \$250</p>
<p>5th year service fee: \$100</p>	<p>5th year service fee: \$150</p>	<p>5th year service fee: \$200</p>	<p>5th year service fee: \$250</p>
<p>6th year service fee: \$100</p>	<p>6th year service fee: \$150</p>	<p>6th year service fee: \$200</p>	<p>6th year service fee: \$250</p>
<p>7th year service fee: \$100</p>	<p>7th year service fee: \$150</p>	<p>7th year service fee: \$200</p>	<p>7th year service fee: \$250</p>
<p>8th year service fee: \$100</p>	<p>8th year service fee: \$150</p>	<p>8th year service fee: \$200</p>	<p>8th year service fee: \$250</p>
<p>9th year service fee: \$100</p>	<p>9th year service fee: \$150</p>	<p>9th year service fee: \$200</p>	<p>9th year service fee: \$250</p>
<p>10th year service fee: \$100</p>	<p>10th year service fee: \$150</p>	<p>10th year service fee: \$200</p>	<p>10th year service fee: \$250</p>
<p>11th year service fee: \$100</p>	<p>11th year service fee: \$150</p>	<p>11th year service fee: \$200</p>	<p>11th year service fee: \$250</p>
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<p>16th year service fee: \$100</p>	<p>16th year service fee: \$150</p>	<p>16th year service fee: \$200</p>	<p>16th year service fee: \$250</p>
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<p>38th year service fee: \$100</p>	<p>38th year service fee: \$150</p>	<p>38th year service fee: \$200</p>	<p>38th year service fee: \$250</p>
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<p>41st year service fee: \$100</p>	<p>41st year service fee: \$150</p>	<p>41st year service fee: \$200</p>	<p>41st year service fee: \$250</p>
<p>42nd year service fee: \$100</p>	<p>42nd year service fee: \$150</p>	<p>42nd year service fee: \$200</p>	<p>42nd year service fee: \$250</p>
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<p>48th year service fee: \$100</p>	<p>48th year service fee: \$150</p>	<p>48th year service fee: \$200</p>	<p>48th year service fee: \$250</p>
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<p>50th year service fee: \$100</p>	<p>50th year service fee: \$150</p>	<p>50th year service fee: \$200</p>	<p>50th year service fee: \$250</p>

*All packages are subject to availability and may vary by region.

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