FOR THE INSTALLER

A GUIDE TO R32 VRF SAFETY MEASURES

MITSUBISHI HEAVY INDUSTRIES
AIR CONDITIONING EUROPE

CONTENTS

INTRODUCTION

This guidebook is designed to assist installers with the knowledge to confidently install and commission MHI R32 Safety measures.

The transition from R410A to R32 refrigerant in VRF systems represents a significant advancement in energy efficiency and environmental sustainability. However, this change necessitates modifications in design and installation practices, particularly concerning **safety measures**.

R32 refrigerant is categorised as mildly flammable (A2L) by International Standard ISO817. Safety measures specified in safety standard IEC60335-2-40 Ed.6.0. must be observed when installing or using R32 refrigerant equipment. **The necessity of safety measures, the type and number of required safety equipment depends on the conditions of each room in the building**. Factors such as room size, layout, and proximity to potential ignition sources must be considered.

COMPLIANCE

If a refrigerant leak occurs indoors, it is necessary to implement measures to ensure that the refrigeration concentration does not exceed a specified threshold.

- The detector must be installed in the **room where the indoor unit or air outlet/inlet is located**, excluding ceiling cavities and unoccupied spaces.
- MHI products are **enhanced tightness refrigerating systems**.
- All MHI products flare valve, operation valve, check joint are **ISO 14903 compliant**.

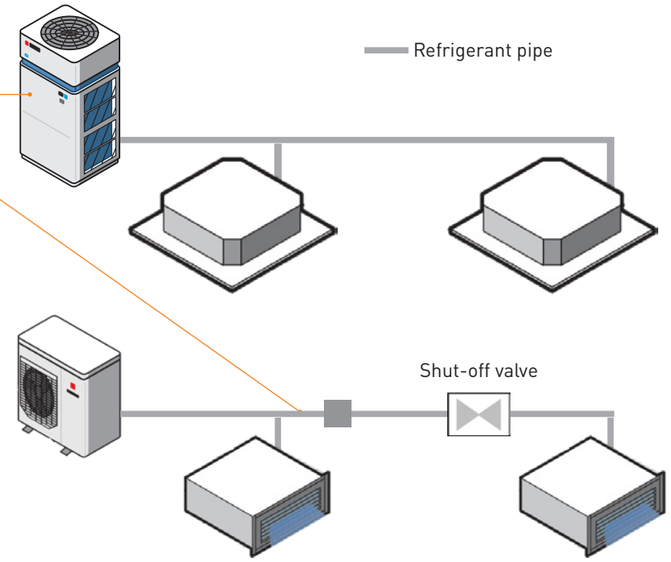
Requirement

Outdoor unit

It shall be located in locations other than occupied spaces

Local pipe

- Permanent joint (brazing)
- Mechanical joint (Flare) in compliance with ISO 14903
- Pipes in the occupied space in question are installed in such a way that it is protected against accidental damage



Machinery room installation

When installing the outdoor unit in a machinery room, ensure compliance with EN378. For further information, please contact your local distributor.

MHI Classify the following as potential leakage points:

- Bends with the centerline bend radius less than 2.5 times the external pipe diameter
- Pipework not protected from potential damage – during normal operation, service or maintenance
- Inlet & Outlet on ductwork
- Heat Exchanger

SAFETY EQUIPMENT

See the below table to check the usability of MHI option's safety equipment units and locally supplied products. If locally supplied products are used, in such cases, use IEC60335-2-40 compliant products.

		Leakage Detector & alarm kit	Remote Controller with alarm	Shut-off valve kit
				
MHI option		**RLD-KIT-E**	**RC-EX3D RC-ES1**	**SV-KIT-S1N-E SV-KIT-L1N-E**
Function	Refrigerant leak detector	✓	–	–
	Safety alarm	✓	✓	-
	Shut-off valve	–	–	✓
	Ventilator	–	–	–
Use of locally supplied products		OK	OK	N/A

OUTDOOR UNIT

Safety measures are available for **Micro KXZ** and **KXZ3 Series**. Only indoor units from the KXZE3-W Series with either the RC-EX3D or RC-ES1 remote control are connectable.

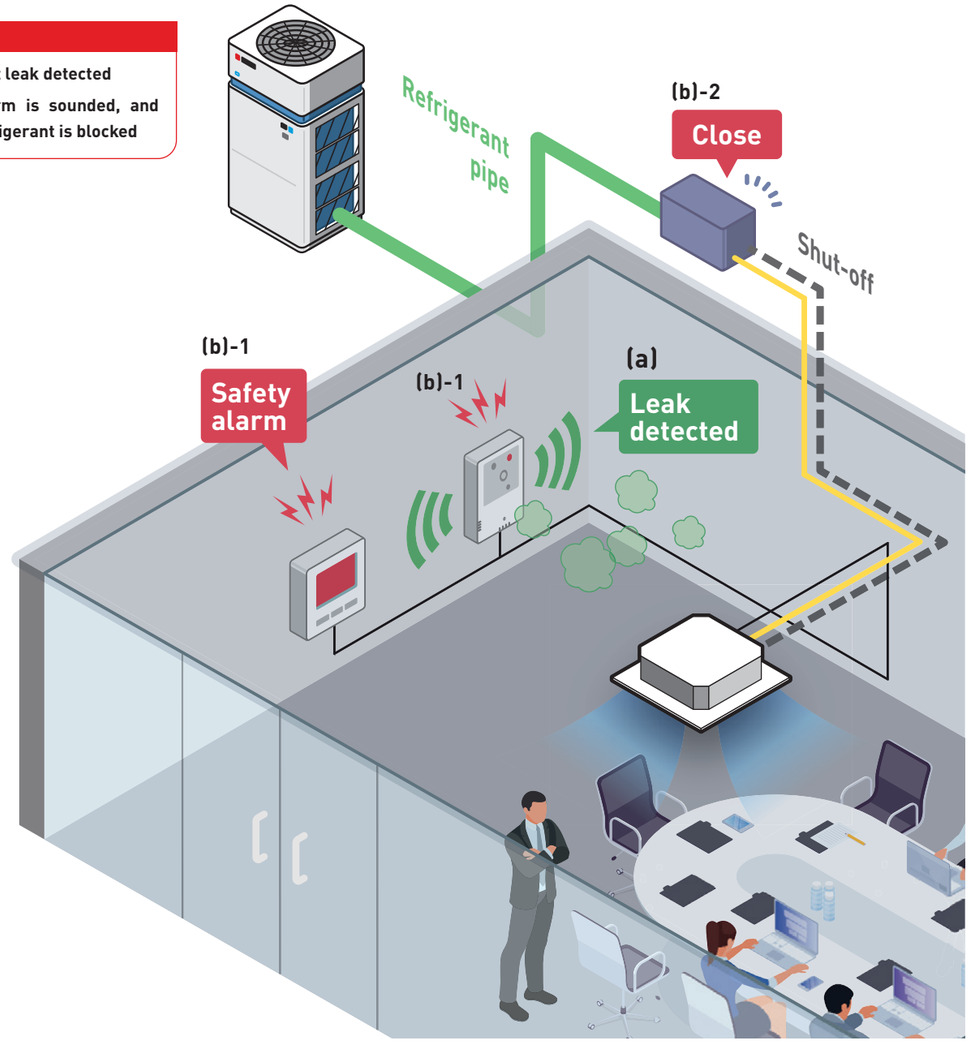
Micro KXZ

KXZ3

EXAMPLE OF THE SAFETY SYSTEM

SCENARIO

1. **Refrigerant leak detected**
2. **Safety alarm is sounded, and flow of refrigerant is blocked**



(a): Refrigerant leak detector (**RLD-KIT-E**) detects refrigerant leakage in room

Refrigerant leakage will be signaled by the flashing LED and the alarm sound.

Warning will only be issued when the alarm function is ON.

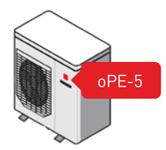
(b)-1: Safety alarm (**RC-EX3D/RC-ES1** or **RLD-KIT-E**) sounds and alerts to signal refrigerant leakage

Leakage detection error **[E23]** is displayed on the remote control in the room where the air-conditioner is installed and the operation is stopped. **[E24]** is displayed on other remote controllers.

(b)-2: Shut-off valve (**SV-KIT-S/L1N-E**) in the refrigerant pipe closes and blocks the flow of refrigerant

KXZ3

Micro KXZ

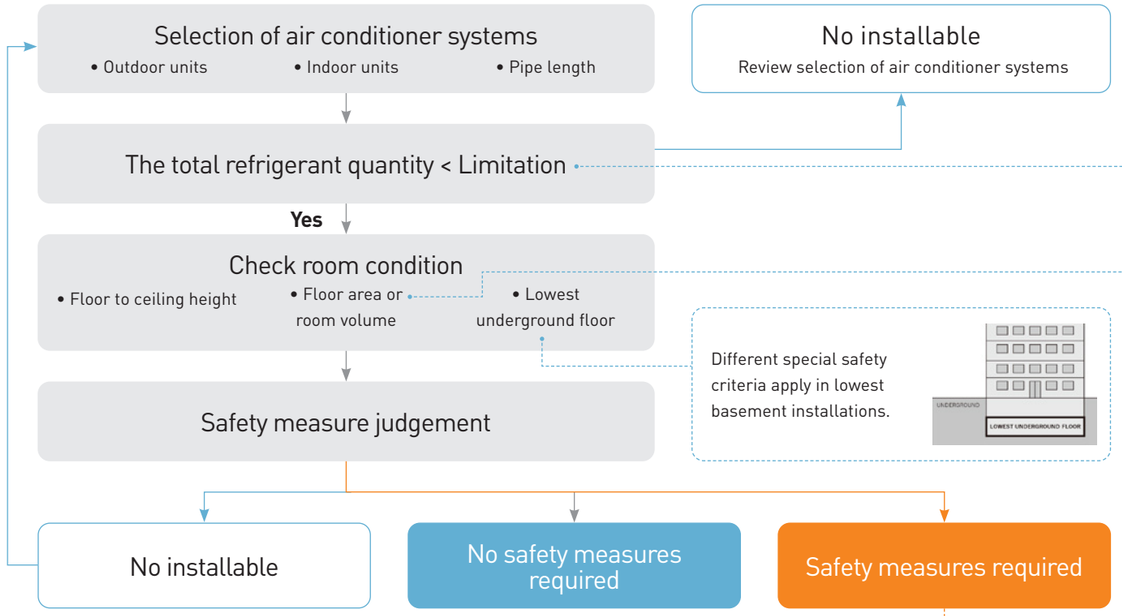


Leakage detection stop error is displayed on the outdoor unit PCB.

CHECK
THE NECESSITY OF SAFETY MEASURES

The necessity of safety measures is judged according to the following flow chart procedure. It depends on the air conditioner system and room condition. (IEC60335.2.40 Ed.6.0). When layout of the room is changed, make the judgement again.

INDOOR UNIT SAFETY MEASURES NECESSITY DETERMINATION FLOWCHART



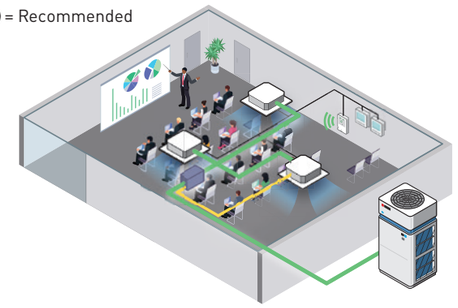
WHEN SAFETY MEASURES ARE REQUIRED

The type and the number of required safety measures depends on the refrigerant quantity, floor area (or room volume) and indoor unit type.

1 piece of safety equipment required

REQUIRED		ANY ONE IS REQUIRED
Leak detector	+	Safety Alarm Shut-off valve Ventilator

= Recommended



2 pieces of safety equipment required

REQUIRED		ANY ONE IS REQUIRED
Leak detector Safety Alarm	+	Shut-off valve Ventilator

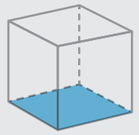
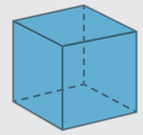
CALCULATION OF REFRIGERANT QUANTITY

The type and the number of required safety measures depends on the refrigerant quantity, floor area (or room volume) and indoor unit type.

Total indoor unit quantity	Refrigerant limit
1	15.9kg
2	31.9kg
3	47.8kg
4 or more	63.8kg

CALCULATION OF FLOOR AREA AND ROOM VOLUME

Please refer to SAFETY MEASURE MANUAL 23.KX-T-430 for detailed calculation conditions.

Room height ≥ 2.2 m	Room height < 2.2m
Calculate **floor area** 	Calculate **room volume** 

SHUT-OFF VALVE

Install Shut-off valves where the following conditions are met for all indoor units.

Selection

Shut-off valve	Total capacity downstream	Indoor units
SV-KIT-S1N-E	90 or less	1 ~ 6
SV-KIT-L1N-E	91 ~ 280	1 ~ 18

Position

Refrigerant amount downstream of the Shut-off valves (kg) × 13.04 (m^3/kg) **<** Capacity of the room where the indoor units downstream of the Shut-off valves are installed (m^3)

SOFTWARE

MHI offer **two industry leading software tools** that can judge the necessity of safety equipment. For further information, contact your distributor.

R32 Calculator

Gives indication of **room sizes in simple 4 steps**.
https://r32-calculator.mhiae.com/index.php

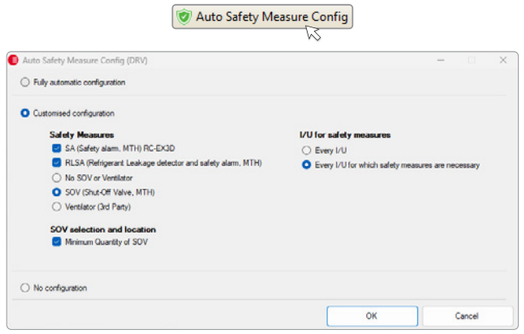
Sample result:

Minimum installation floor area

Safety measures	Ducted / Cassette	Wall-mounted	Floor-standing
0	59.22m^2	59.22m^2	59.22m^2
1	29.61m^2	29.61m^2	29.61m^2
2	0m^2	0m^2	0m^2

e-solution

Gives indication of **safety measures**. After entering the air conditioner systems and room condition, **automatically assign safety measures in 2 clicks**.



DESIGN

DECIDING TO DEPLOY SAFETY EQUIPMENT

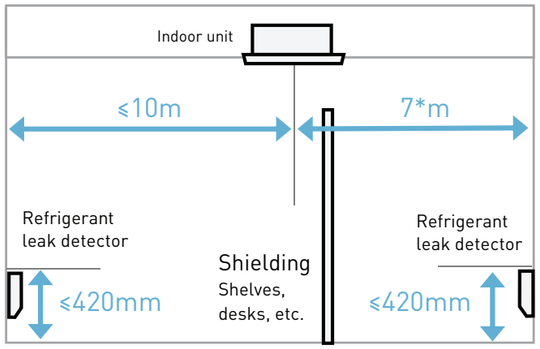
MHI REFRIGERANT LEAK DETECTOR

Up to 4 Detectors, or 3 Detectors and 1 remote controller, can be connected to 1 indoor unit.
*Refrigerant leak detectors other than MHI options can be used. In such cases, use IEC60335-2-40 compliant products.

Installation positions and space

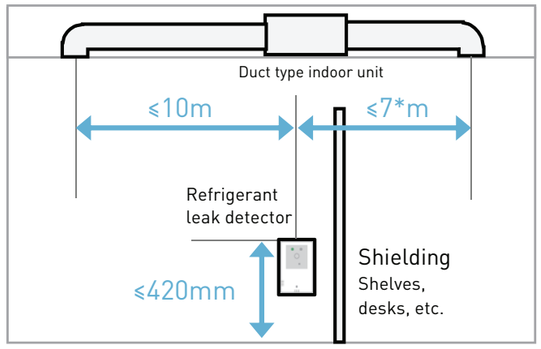
In case the indoor unit is not ducted type

One detector can be set for **indoor units**.



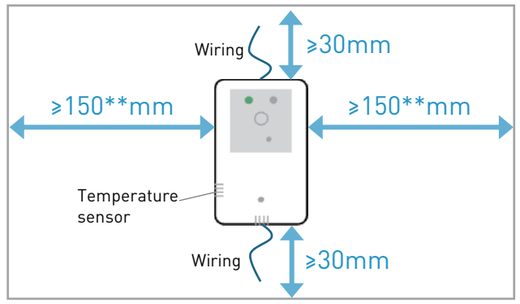
In case the indoor unit is ducted type

One detector can be installed for **inlet and outlet. Inlet and outlet should serve the same room**.



Wiring

- Installation method: embedding or exposing
- Wiring direction: backward, upper or lower



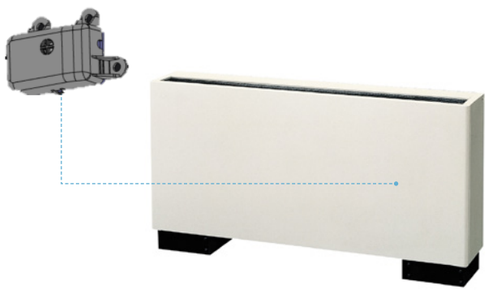
*When detector is obstructed from sight by shielding, within 7m.

Secure minimum spaces for disassembling the case. If using L-shaped screwdriver, **≥50mm is available.

NOTES

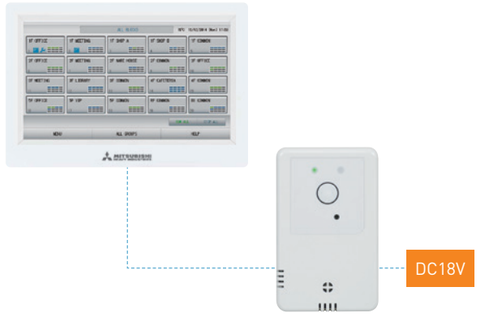
Floor-standing type

These indoor units have a built-in refrigerant detector. No separate installation of RLD-KIT-E is required.



Relay cable

Relay cable (RLD-WR) allows Refrigerant leak detector to function as an audible alarm when connected to a central control system.

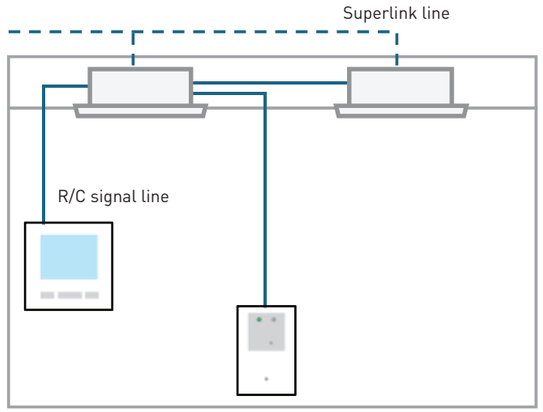


Grouping setting

- Available only when **indoor units are installed in the same room**.
- Detector and Shut-off valve can be set to **Main unit in the same indoor unit**.
- The built-in leak detector in the floor-standing unit **cannot** be used for other indoor units, even if Main/Sub is set. Install a separate leak detector if needed.

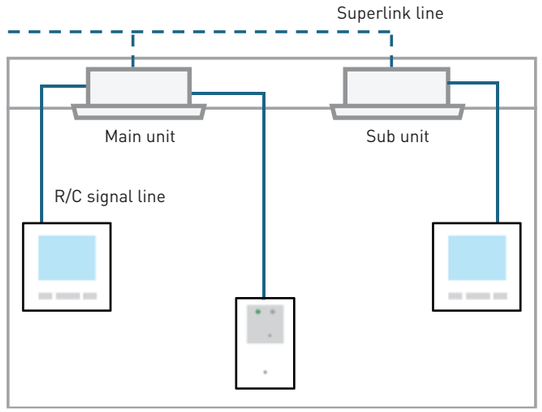
Hard wire connection

Connect Detector to one indoor unit via the remote control (R/C) line. Link all indoor units using the same line.



Without R/C line between indoor units

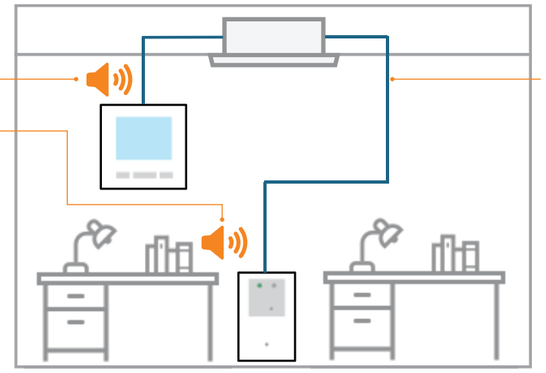
Connect Detector only to the indoor unit designated as the Main unit. In this case, set each indoor units as Main/Sub units.



MHI SAFETY ALARM

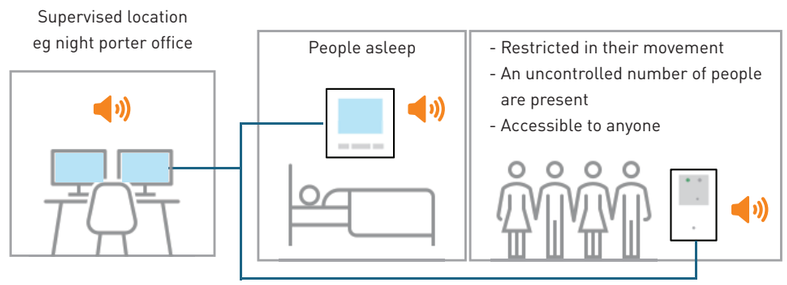
MHI Leak detector and Remote controller have safety alarm function.

At least **one** installation per room is required.



Power is supplied through the indoor unit connected. **Keep the indoor unit powered on**, even when not using the air conditioner.

Alert at the supervised location is also required when safety alarm is installed in following rooms.



*Safety alarm other than MHI options can be used. In such cases, use IEC60335-2-40 compliant products.

DESIGN
DECIDING TO DEPLOY SAFETY EQUIPMENT

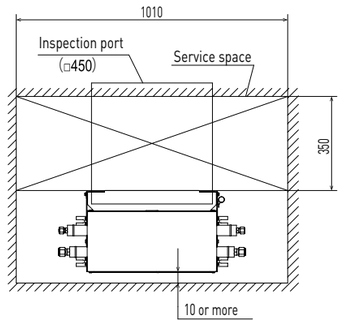
MHI SHUT-OFF VALVE

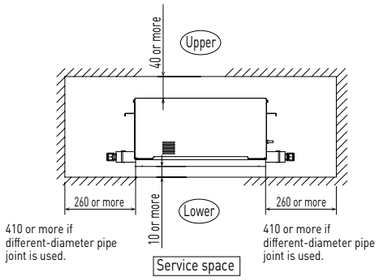
MHI option (**SV-KIT-S(L)1N-E**) must be used.

Installation positions and space

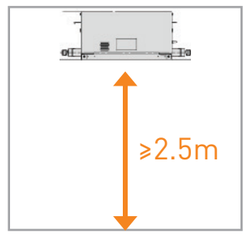
Service space required

- Open at least one side (minimum 3m) for heat release
- Provide an **inspection port**



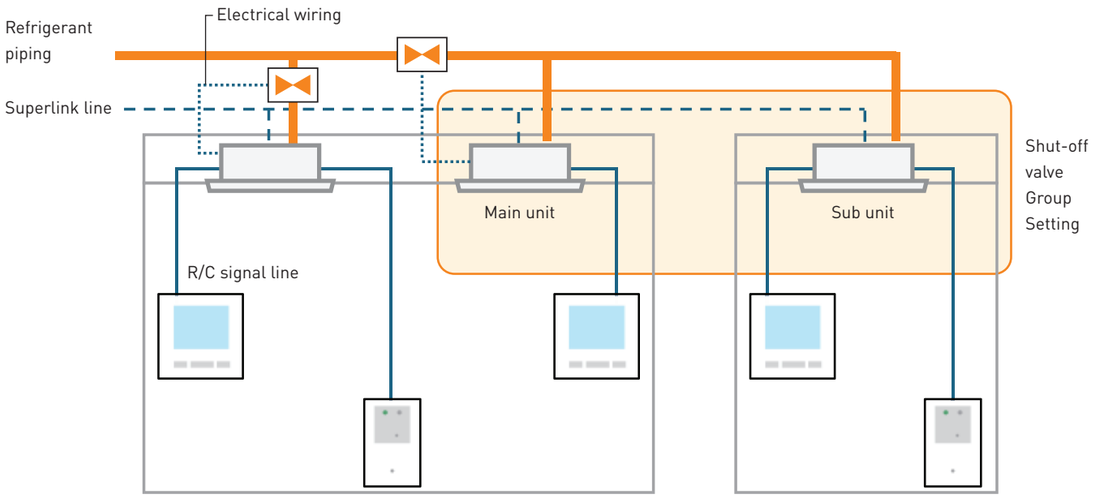


- In case SOV is installed in the indoor space

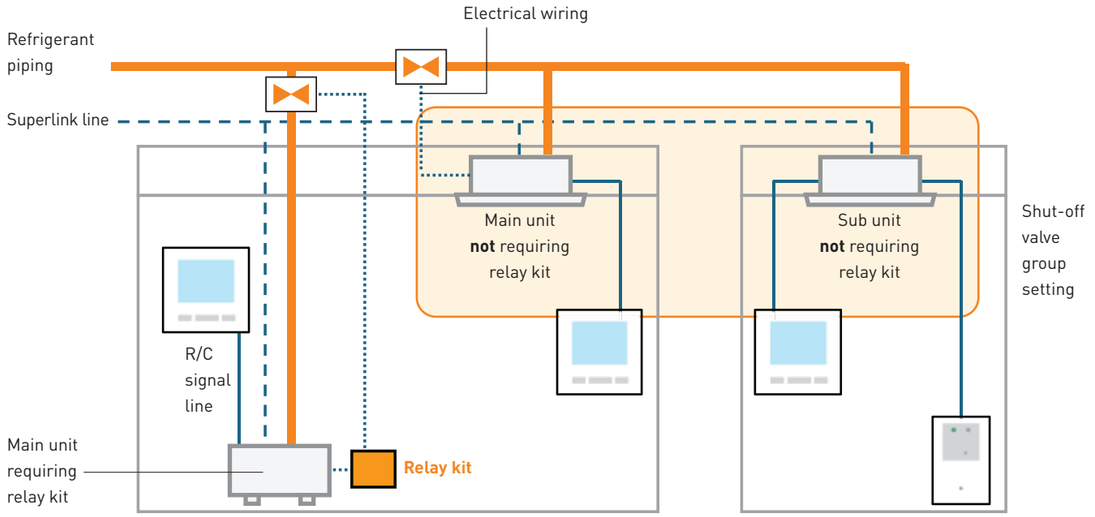


Grouping setting

- One Shut-off valve can serve **multiple indoor units** in different rooms if conditions are met. Connect its power cable to the **'main' downstream unit** if multiple are connected.
- **Separate groups** can be set for refrigerant leak detector and Shut-off valve.



- For the following models that are set as Main units for Shut-off valve, a relay kit (SV-RLY-E) is required.
- **FDUT-KXZE3-W* FDUH-KXZE3-W FDTQ-KXZE3-W FDFL-KXZE3-W FDFU-KXZE3-W**
  *Excluding FDUT71KXZE3-W
- When setting Shut-off valve grouping for an indoor unit that requires a relay kit for Shut-off valves, a relay kit is not required if you set it to a Sub unit.



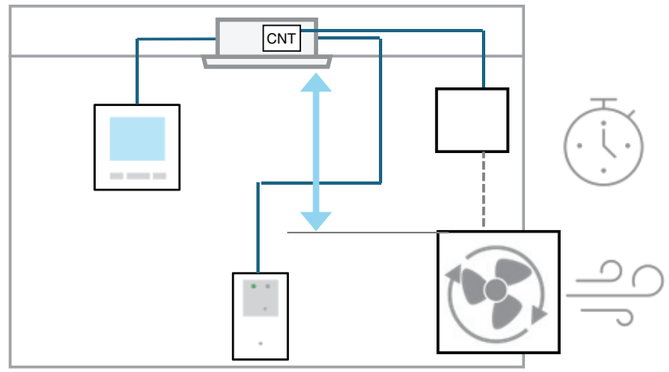
VENTILATOR

MHI option has not been prepared. Use IEC60335-2-40 edition 6 compliant products.

Requirement

When a leak is detected, DC 12V is output from the CNT connector on the indoor unit PCB. Use this signal to activate the ventilation system. Alternatively, 24/7 mechanical ventilation can be used providing it is interlinked with the system.

The top of the ventilation opening must be **lower** than the bottom of the indoor unit.

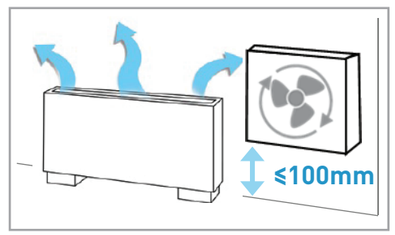


Ventilation must continue for **5 minutes** after the CNT output turns OFF. Use a timer or similar device to configure this delay.

Min. airflow: **132 m³/h**

Ventilation Outlet must connect to the **outdoors**. Ensure the air inlet is properly designed to allow adequate airflow intake.

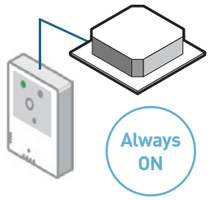
For floor-standing indoor units, the ventilation opening must be within 100mm from the floor.



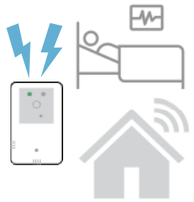
INSTALLATION

MHI REFRIGERANT LEAK DETECTOR

Caution



Power supply
power is supplied through the indoor unit connected. Keep the indoor unit powered on, even when not using the air conditioner.



When installing the unit at a hospital, telecommunication facility, etc.
Take measures to suppress electric noises.

Installation place

- **Flat** surfaces
- **Sturdy and stable** mounting area
- Ambient temperatures **0°C ~ 40°C**
- **Low humidity** areas

Avoid **uneven** surfaces

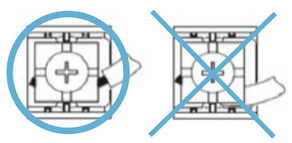
Avoid direct **sunlight**

Avoid **inaccurate** temperature detection

Refrigerant leak detector wiring installation

R/C cable length	R/C cable size	Max inner size
≤100m	0.3mm²	0.3mm²
≤200m	0.5mm²	0.5mm²*
≤300m	0.75mm²	0.5mm²*
≤400m	1.25mm²	0.5mm²*
≤600m	2.0mm²	0.5mm²*

*Use 0.5 mm² wire in Detector, then connect to thicker wire outside. Seal connection to prevent water ingress.



Be careful not to pinch the wire sheath.

Tighten connections by hand (torque: ≤0.7N·m). Avoid an electric screwdriver to prevent damage.

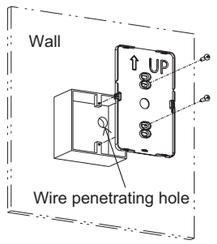
Embedding wiring (backward entry)

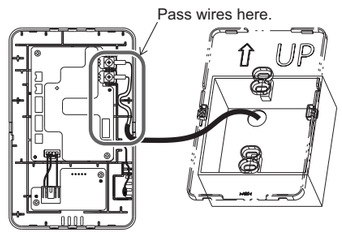
1 Embed the switch box and wiring in advance.

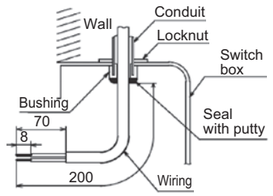
2 Secure the lower case to the switch box at two points.

3 Connect **X and Y terminals** between Detector and Indoor unit. Polarity-free.

4 Install the upper case carefully to **avoid pinching the wires**.







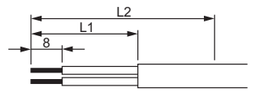
Exposing wiring (upper or lower entry)

1 Treat wire end. Cut out the thin wall sections on the upper case. After installation, seal this area.

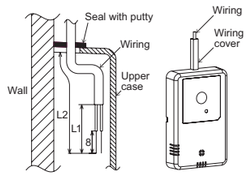
2 Secure the lower case to the switch box at **two points**.

3 Connect **X and Y terminals** between Detector and remote controller or Indoor unit. Polarity-free.

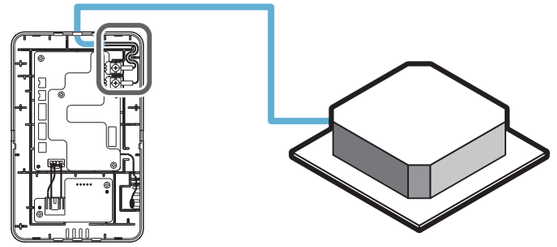
4 Install the upper case carefully to **avoid pinching the wires**.



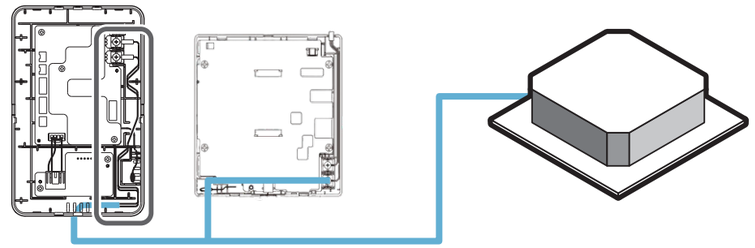
Wire take-out direction	Upper	Lower
L1	70mm	150mm
L2	120mm	200mm



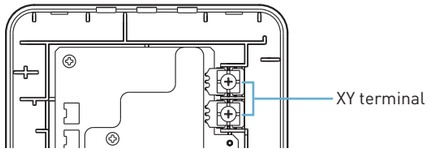
Upper entry



Lower entry



When the detector is not connected to indoor unit
When the detector is used only as an alarm and not connected to an indoor unit, no power is supplied. In this case, connect a DC 18V power source to the detector's XY terminal.



MHI RELAY CABLE (RLD-WR)

Relay cable wiring installation

1 Connect the R/C cable to DO2 on the central control and the relay cable.

2 Connect the white 2-pin connector of the relay cable to the CNMA terminal on the detector board.

3 Place the connection section between the R/C cable and relay cable inside the detector.

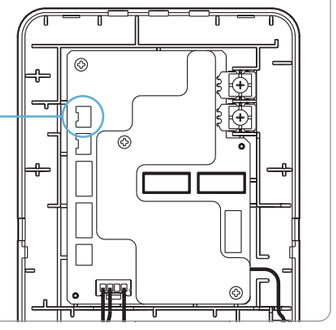
4 Install the upper case carefully to **avoid pinching the wires**.

RLD-WR Spec.
Wire length: 110mm
Wire Conductor nominal sectional area: 0.3m m²
Wire measurement: 1.7mm
Wire colour: White

R/C Cable Spec.
0.75mm²
RLD-WR -> SL4: Max 2m

CNMA connector (2-pin, white)

Refer to the central control and refrigerant leak detector's installation manuals for details.



INSTALLATION

MHI SHUT-OFF VALVE

Caution

MHI option (**SV-KIT-S(L)1N-E**) must be used. Check that the surface can support the valve. Reinforce if needed to prevent falling and injury.

Away from **fire alarms**

Over **1m** away from TVs/radios

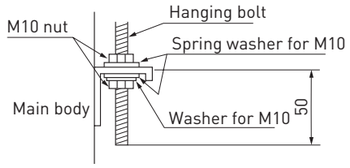
Dewpoint **<28°C**, humidity **<80%**. Add 10-20mm insulation if the condition over above values

No **water-sensitive** items below

Not directly exposed to **oil mist, dust, or steam**

Not affected by **heat** from cooking appliances

Use four **M10 hanging bolts** with strength to withstand **20kg** pulling force per bolt and fasten securely.

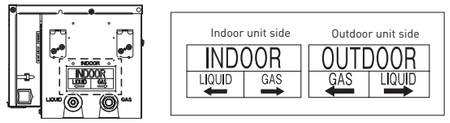


Do not install the shut-off valve upside down. **Keep it horizontally level**.

Shut-off valve refrigerant pipe connection

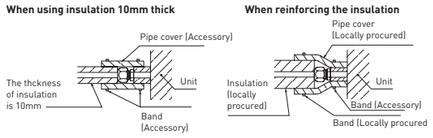
1 Preparation: Use C1220T pipe. Store cupper pipes indoors and seal both ends until brazing.

2 Connect refrigerant pipes correctly. Match indoor and outdoor unit sides as labeled.



3 Nut fastening: Use the double spanner method to hold the nut on Shut-off valve pipe side.

4 Insulation: Always dress the pipes with the supplied pipe cover for heat insulation.



Different diameter pipe joint

Use the included joint if pipe sizes differ.

Shut-off valve	Different diameter pipe joint	
	Gas pipe	Liquid pipe
SV-KIT-S1N-E	2 pieces	2 pieces
SV-KIT-L1N-E	For D19.05 2 pieces For D19.05 2 pieces	2 pieces

Shut-off valve wiring installation

- Electrical work must be performed by a licensed contractor in accordance with national regulations and the installation manual.
- Do not splice or extend cables. If unavoidable, ensure complete waterproofing to prevent faults.
- Wiring method depends on indoor unit type. Check the terminal block and follow the valve's wiring label.

Type	Connection	Size	Length
– Cupper only – Do not use cords lighter than: • rubber sheathed • PVC sheathed (code designation 60227 IEC 53)	Round crimp terminals	2.0~3.5mm²	~100m

1 **Grounding is mandatory**. Select a circuit breaker based on both the indoor unit and Shut-off valve current.

2 Remove the screws: (2 pcs.) and slide the front panel.

3 Connect each wire to the TB1 terminal block inside the Shut-off valve.

4 Keep power and signal lines separate to avoid. malfunction.

5 Securely fasten wires to terminals and fix cords to avoid stress.

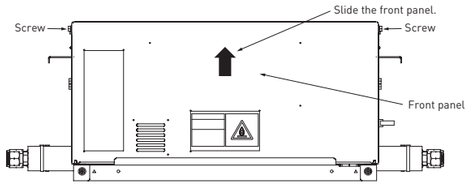
6 Secure the wires together with a band.

7 Protect wires behind ceilings using copper or metal conduit to prevent rodent damage.

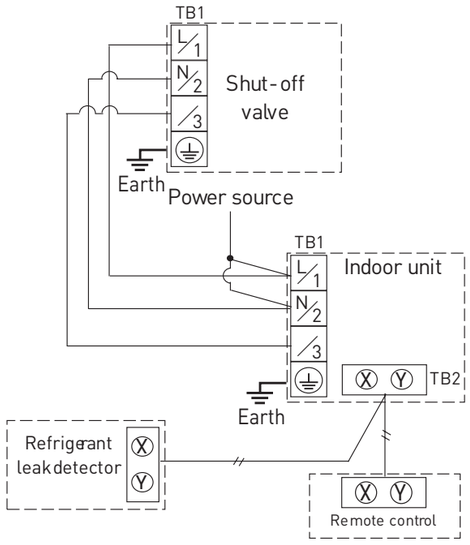
8 Attach the electrical rating label (included with the valve) near the indoor unit control.

9 Reinstall the front panel and tighten the screws.

Shut-off valve wiring



TB1 three-line connection

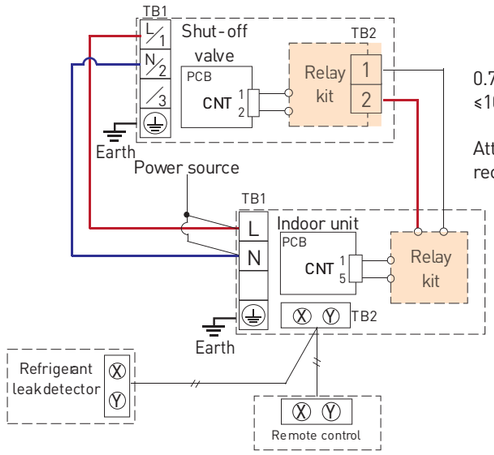


INSTALLATION

MHI RELAY KIT

Relay kit wiring installation

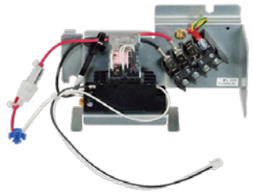
CNT connection



0.75mm²
≤100m

Attach a protective tube. 3-core cable recommended. (Locally supplied)

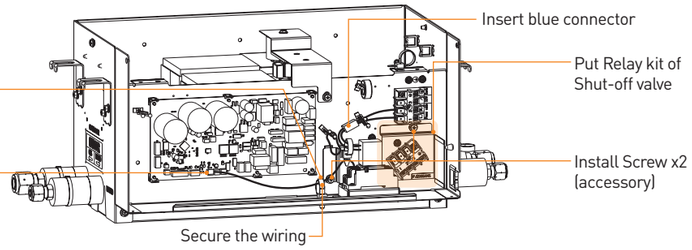
Relay kit (Shut-off valve)



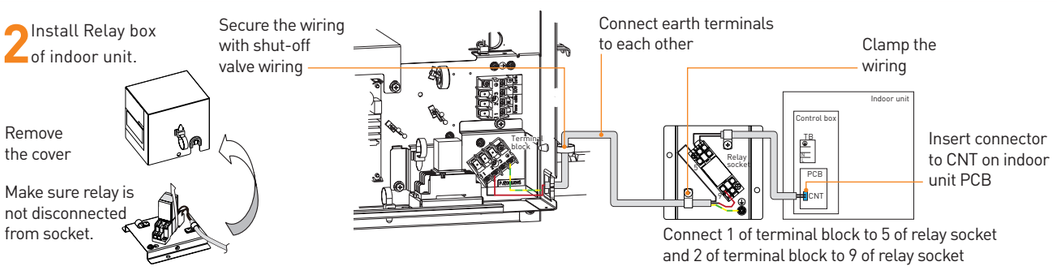
Relay kit (Indoor)

Installation of Relay kit

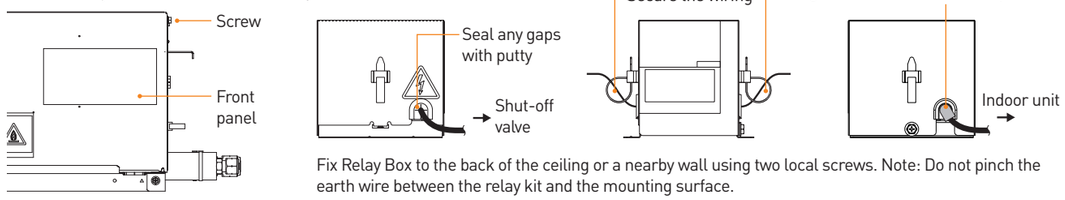
1 Install Relay kit of Shut-off valve.



2 Install Relay box of indoor unit.



3 Install the front panel of Shut-off valve and Relay box. Attach label to front panel.

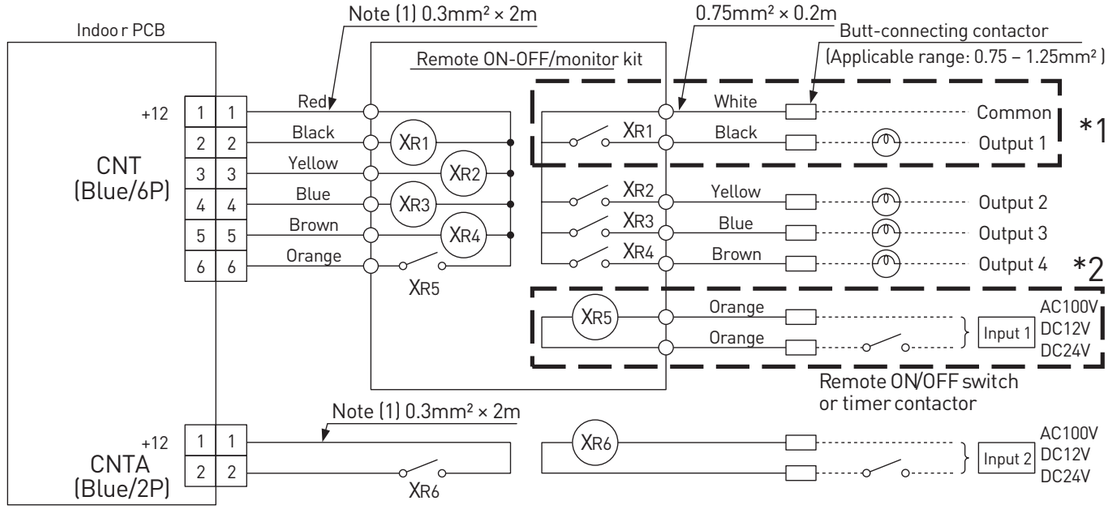


Fix Relay Box to the back of the ceiling or a nearby wall using two local screws. Note: Do not pinch the earth wire between the relay kit and the mounting surface.

LOCALLY ARRANGED SAFETY EQUIPMENT

Indoor unit Wiring installation

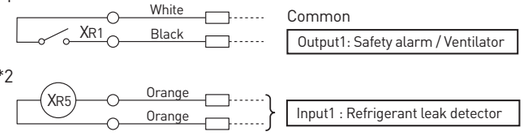
Locally arranged safety equipment (Refrigerant leak detector, Safety alarm and Ventilator) can be connected to CNT connector on indoor unit PCB.



Note (1) To be no longer than 2 m.

- XR1-4 are DC 12 V relays. (Equivalent to Omron LY2F)
- XR5 is a DC 12 V, 24 V or 100 V relay. (Equivalent to Omron MY2F)
- Maker and model of CNT connector (Site side)
  Connector : Molex 5264-06
  Terminal : Molex 5263T

*1



*2

SAFETY ALARM OR VENTILATOR

CNT connect	XR1~3
Remote Control setting	**Output setting** Top screen ▼ Menu ▼ Service setting ▼ IU settings ▼ External output setting ▼ External output 1~3 ▼ **Refrigerant leakage output**

REFRIGERANT LEAK DETECTOR

CNT connect	XR5~6
Remote Control setting	**Input setting** Top screen ▼ Menu ▼ Service setting ▼ IU settings ▼ External input 1~2 ▼ **Refrigerant leakage**

SETTING

MHI REFRIGERANT LEAK DETECTOR

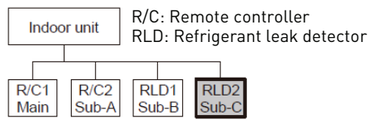
DIP-SW Setting

SW	Function	ON	OFF	Original factory state	Notes
1-1	Main-sub setting	Refer to Main-sub setting table		OFF	This setting is required when : • The remote controller is not connected • 2~4 detectors are connected to a single indoor unit
1-2	Main-sub setting	Refer to Main-sub setting table		OFF	This setting is required when : • The remote controller is not connected • 2~4 detectors are connected to a single indoor unit
1-4	Inspection mode	Valid	Invalid	OFF	Refer to 6 "Safety equipment check"
2-1	Alarm sound stop function	Valid	Invalid	ON	Press the detector's button once during an alarm to stop the sound. To disable this function, set SW2-1 to OFF.
2-2	Alarm function	Valid	Invalid	ON	Sounds a 65 dB alarm when refrigerant leakage is detected. If using another alarm system, set SW2-2 to OFF. Note: If disabled, another alert device must be installed.
2-3	Leak detect function	Valid	Invalid	ON	If using another detector and this device only for sound, set SW2-3 to OFF. Note: If disabled, another detection device must be installed.

SW1-3 and SW2-4 are no function.

Main-sub setting		SW1-1	
		ON	OFF
SW1-2	ON	Main	Sub-C
	OFF	Sub-A	Sub-B

Note: Since R/C2 is Sub-A, make sure to set RLD2 as Sub-C.



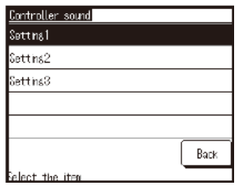
R/C: Remote controller
RLD: Refrigerant leak detector

Setting by remote control

Sound level, LED brightness and Refrigerant density alarm threshold settings can be configured using the remote control (RC-EX3D or later). Administrator password is required. Note: The remote controller screen layout may change without notice. Please refer to Remote controller manual for latest info.

Top screen ▸ Menu ▸ User setting ▸ Administrator settings ▸ Select Refrigerant leak detector setting

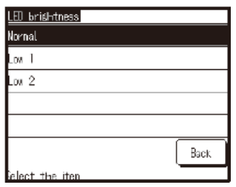
Controller sound



Alarm sound plays for 3 seconds during setting.

Setting 1: Loudest (default)
Setting 2: Medium
Setting 3: Low

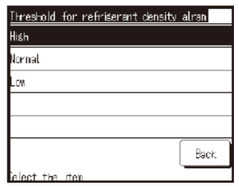
LCD brightness



Operation light(Green) brightness is adjustable.

Normal: 100% (default)
Low 1: 75%
Low 2: 50%

LED threshold for refrigerant density alarm



After the leak is detected, the refrigerant concentration should decrease, and the audible alarm and error light should return to normal. The density threshold can be set as follows:

High: Triggers at leak detection level (default)
Normal: Mid-level sensitivity
Low: Near minimum detectable level

MHI RELAY CABLE

1 Set Detector's DIP-SW.
SW2-2: ON
SW2-3: OFF

2 Set central control "OPEN/CLOSE setting of Malfunction Output (Normal)" to "OPEN".

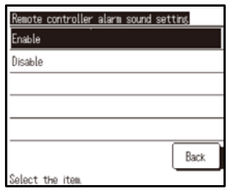
3 Set central control "Malfunction Output (ALL/Leakage)" to "LEAKAGE (refrigerant leakage)"

If the Refrigerant leak detector's DIP-SW is not set up, this detector cannot be used as an audible alarming device. For instructions on how to set up the central control, refer to the user's manual of the central control.

REMOTE CONTROL FOR SAFETY ALARM

The RC-EX3D remote control can be used as a safety alarm for refrigerant leaks.

Top screen ▸ Menu ▸ Service setting ▸ Service ▸ Maintenance ▸ Installation setting ▸ Remote controller alarm sound setting



Enable: Sounds alarm (~60 dB at 1 m) if a refrigerant leak is detected or the detector malfunctions
Disable: No alarm sound, even if a leak or error occurs (default)

MHI RELAY KIT

Top screen ▸ Menu ▸ Service setting ▸ IU settings ▸ External output setting ▸ External output 4 ▸ Operation output ▸ Shut-off valve output

Functions that can be set

- Operation output
- Heating output
- Compressor ON output
- Inspection (Error) output
- Cooling output
- Fan operation output 1
- Fan operation output 2
- Fan operation output 3
- Defrost/oil return output
- Ventilation output
- Heater output
- Free cooling output
- Indoor unit overload alarm output
- Refrigerant leakage output
- **Shut off valve output**

Set External Output 4 to "Shut-off Valve Output" using the remote control.

Refer to the indoor unit (IU) settings section in the remote-control installation manual (RC-EX3D or later) for detailed instructions.

SETTING

GROUP SETTING

Main/Sub settings are required in the following case:

- A floor-standing unit (FDFW,FDFU/FL) is installed.
- Several indoor units are installed in the same room.
- Shut-off valve is grouped with several indoor units.

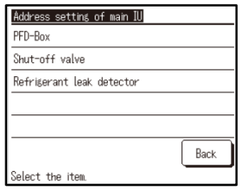
Even if no safety measure is not needed, this setting is necessary.

The built-in leak detector in the floor-standing unit cannot be used for other indoor units, even if Min/Sub is set. Install a separate leak detector if needed.

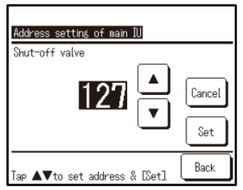
Incorrect Main unit settings may cause abnormal operation and display error "E18" on the remote control.

How to set Main/Sub unit for Refrigerant leak detector and Shut-off valve

Top screen ▸ Menu ▸ Service setting ▸ Installation settings
▸ Address setting of main IU ▸ Refrigerant leak detector / Shut-off valve



Set from all indoor units you want to set to Sub unit.



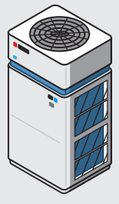
Tap "▲" and "▼" to set address No. you want to set to Main unit And "Set".

OPTION – EMERGENCY OPERATION SETTING

When the Emergency Operation function is enabled in the outdoor unit settings and the conditions meet all below requirements, the air conditioner can continue operating for a limited time in rooms where no refrigerant leak has occurred, even if a leak is detected elsewhere.

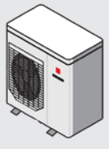
- A Shut-off valve is connected to the indoor unit where the leak occurred.
- Only MHI safety equipment is connected to the leaking indoor unit.
- The leaking indoor unit (or Main unit if using base-extension Shut-off valve setting) is not one of the following models: FDUH, FDTQ, FDUT15/22/28/36/45/56, FDFL, FDFU, FDFW
- -The leaking indoor unit is not set as Main/Sub in the refrigerant leak detector settings.
- -No continuous ventilator is installed as safety equipment.

How to set emergency operation mode



KXZ3

DIPSW **[10-3]: ON**

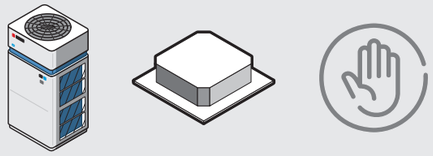


Micro KXZ

7-segment **[P85]: 1**

SAFETY EQUIPMENT CHECK PROCEDURE

1 Make sure that all units are stopped.



2 Set 7-segment display to "**1**"

3 Set Refrigerant leak detector **DIPSW2-3 ON** (default: ON)

4 Press and hold the push button **twice for 3 seconds each**

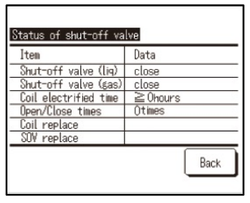
5 Verify operation of each safety equipment

Alarm sounds Red LED flashing

Red LED flashing
Display E23
(Alarm sounds and display flash if alarm function is ON)

6 Check Shut-off valve is closed from Remote controller or red LED flashing on the PCB

Top screen ▸
Menu ▸
Service setting ▸
Service & Maintenance ▸
Input password ▸
Safety system maintenance ▸
Shut-off valve maintenance ▸
Status of Shut-off valve Confirm



7 Clearing errors

Press the button once to stop the alarm sound. Press the button 3 times to stop red LED flashing

If SOV is used for multiple IU reset each leak detector downstream

Press the Run/Stop switch Stop red LED flashing

8 Repeat 1 ~ 7 for all safety equipment

9 After check all safety equipment, set 7-segment display to "0"

APPENDIX

INSTALLATION PROCEDURE

1 Set Refrigerant piping work

2 Air tightness test / vacuuming

3 Additional refrigerant charge

4 Electrical wiring

5 Setting

6 Safety equipment check

7 Unit test operation

Brazing must be done before powering Shut-off valve. If already powered, keep power on during brazing to ensure nitrogen flow.

After installation equipment and setting, verify all safety equipment connections. If not properly connected, the equipment may not function correctly.

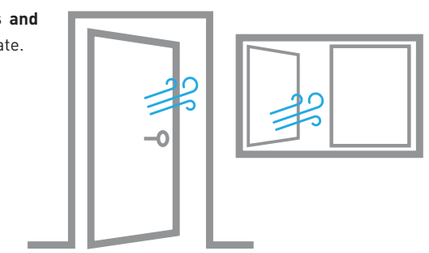
TROUBLE SHOOTING

List of remote control displays related to safety equipment

Display	Content	Countermeasure
E23	Refrigerant leak detection	Please repair the leakage point.
E24	Detection of refrigerant leakage from other indoor units (stopping operation)	Please repair the leakage point.
M11	Refrigerant detector failure	Replace the detector.
M12	Refrigerant sensor disconnected/broken wire	Connect the detector sensor correctly.
M24	Detection of refrigerant leakage from other indoor units (emergency operation)	Please repair the leakage point.
M41	Detector communication error	Repair the wiring between the indoor unit and the detector.
M42	Shut-off valve communication error	Repair the wiring between the indoor unit and the Shut-off valve.
M51	Refrigerant leak detector replacement Period	Replace the detector.
M52	Refrigerant leak detector replacement timing notice	It is six months before the refrigerant detector is due to be replaced. Replace the detector.
M54	Shut-off valve replacement period	Check open/close count and coil energization time via remote control. • If open/close count ≥ 7500 → Replace valve body. Reset replacement display. • If open/close count < 7500 and coil time > 20,000 hrs → Replace coil. Reset display.

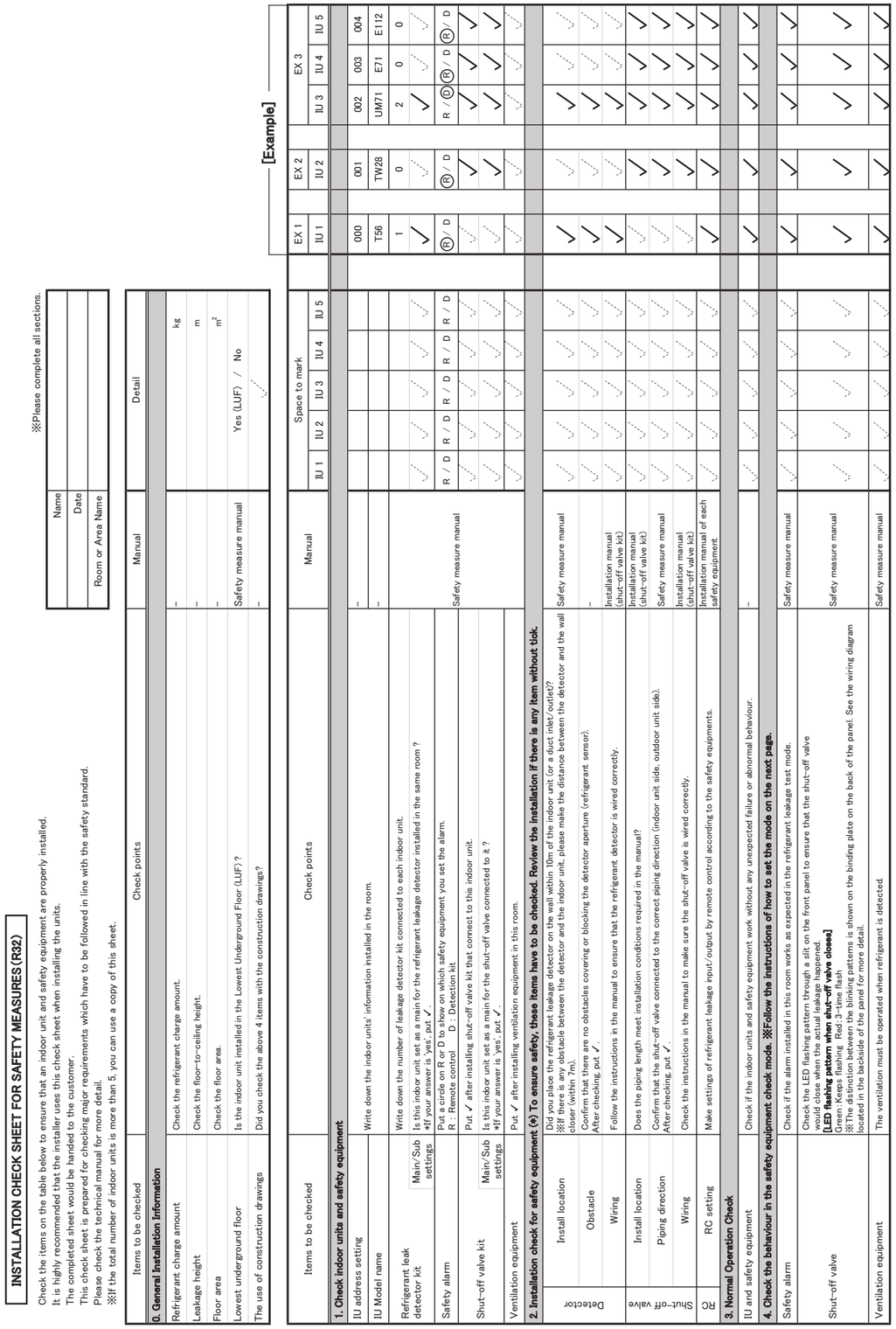
In case of refrigerant leakage

Open windows and doors to ventilate.



Contact the building manager or the person indicated on the remote control.

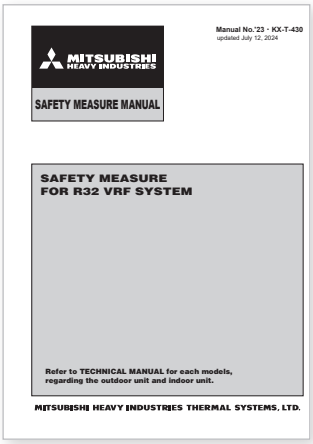
INSTALLATION CHECK SHEET



PSC012D184A A

GUIDE TO R32 VRF SAFETY MEASURES FOR THE SPECIFIER

This guidebook is designed to assist distributors, engineers, and consultants with the knowledge to adopt, specify and sell MHI's R32 VRF systems confidently. It can be found on our website or you can enquire with your local distributor.



SAFETY MEASURE MANUAL 23.KX-T-430

For further installation information, please refer to our safety measures manual which can be found on our website.

MHI E-SERVICE

This is an application that enables users to make a quick search of the meaning of error codes in MHI products.

OUR YOUTUBE CHANNEL

www.youtube.com/@mitsubishiheavyindustriesa2689

We provide our YouTube channel which has useful video demonstrations and animations.

OUR WEBSITE

https://mhiae.com/

If you wish to learn more about our products, please visit our website.

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