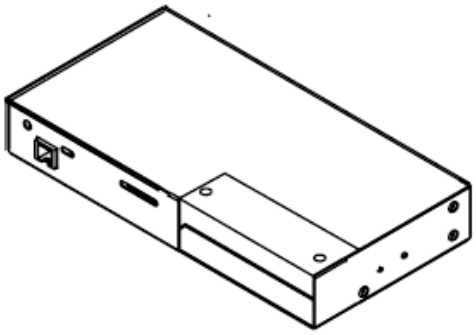
MITSUBISHI ELECTRIC

Air-conditioner Control System

Centralized Controller
Model: GB-24A

Installation Manual



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Before installing the controller, please read this Installation Manual carefully to ensure proper operation.
Retain this manual for future reference.

This manual describes how to install the centralized controller and wiring. Before installing the controller, read the 1 Safety Precautions section carefully to ensure proper installation.

1 Safety Precautions

Safety symbols used in this manual
The following symbols are used in this manual to indicate the type and severity of potential consequences that may result when given instructions are not followed exactly as stated.

⚠ **WARNING**	Indicates a risk of death or serious injury.
⚠ **CAUTION**	Indicates a risk of injury or damage to the controller.

Retain the Installation Manual and the Instruction Book for future reference. Make sure both the Installation Manual and the Instruction Book are given to any future air condition system users.

⚠WARNING

The controller must be professionally installed.
Improper installation by an unqualified person may result in electric shock or fire.

Make sure the controller is securely mounted so that it will not fall.

Only use specified cables. Securely connect each cable so that the weight of the cable is not applied to the connectors.
Loose or improper connections may result in heat generation or fire.

Do not attempt to modify or repair the controller.
Modification or improper repair may result in electric shock or fire.
Consult your dealer when repairs are necessary.

Securely install the controller according to the installation manual.
Improper installation may result in electric shock or fire.

Electric work must be perform by authorized personnel according to the local regulations and the instructions detailed in the installation manual.
Inadequate circuit capacity or improper installation may result in electric shock or fire.

Ask your dealer or an authorized technician to move the controller.
Improper installation may result in electric shock or fire or damage to the controller.

This appliance must be grounded.
Make sure to install a ground wire.
Do not connect the ground wire to gas or water pipes, lightning conductors or telephone grounding lines.
Improper grounding may cause an electric shock.

⚠CAUTION

Do not install the controller where there is a risk of flammable gas.
If the leaked gas accumulates around the controller, it may ignite and cause an explosion.

Do not use the controller in an environment high in oil, steam, or sulfuric gas.
These substances may have adverse effects on the performance of the controller or damage its parts.

Do not install this controller where the ambient temperature exceeds 104ºF (40ºC) or drops below 32ºF (0ºC).
To prevent the controller from being damaged and malfunctioning, install it away from direct sunlight.

Do not install this controller in a place that has the potential for steam or condensate formation.
Steam or condensate formation may cause an electric shock or a unit malfunction.

⚠CAUTION

When installing the controller in a hospital or communication facility, take appropriate measures to reduce electrical noise interference.
Inverter equipment, generators, high-frequency medical equipment, or radio communication equipment may interfere with the normal operation of the controller; or the electrical noise from the controller may interfere with the medical practice or cause image distortion and static.

To prevent over-heating and fire, wire so that the weight of the cable will not strain the connectors.

Do not expose the controller to water.
Water may damage the controller and cause an electric shock.

Use specified wires with the proper current carrying capacity to prevent current leakage, over-heating, or fire.

Do not touch the PCB (Printed Circuit Board) with your hand or a tool. Also do not get dust on the PCB.
It may cause a fire or malfunction.

To reduce the risk of electric shock, install and wire the unit with the power to power supply unit turned off.

Do not install this controller where an acid, alkaline solution, special chemical spray is used frequently to avoid electric shock or malfunction.

Do not press the switches with sharp objects.
It may cause an electric shock or malfunction.

To avoid causing damage or fire, do not apply an AC voltage or a voltage higher than 30VDC to the M-NET terminal blocks on the controller.

Do not touch the switches with wet hands.
It may cause an electric shock or malfunction.

Use a security device such as a VPN router when connecting the GB-24A to the Internet to prevent unauthorized access.
If no security devices are installed, the operation settings may be changed by an unauthorized person without the knowledge of the user.

2 Parts List

*Please confirm that in addition to this Installation Manual, the following items are shipped with the unit.

No.	Part name	Qty.
1	Centralized controller	1
2	L-fitting	2
3	M3 (8mm (5/16in)) round head screw (for attaching the L-fitting)	4
4	DIN rail attachment	2
5	M3 (6mm (1/4in)) round head screw (for attaching the DIN rail attachment)	8
6	Installation manual (this book)	1
7	Instruction book	1
8	Web browser operation manual	1
9	Operation manual for Initial setting web	1

* The screws for installing to the control panel are not included. (M4 screws)
* In addition to the parts above, a power supply unit for transmission line, which supplies the power to the centralized controller through the transmission line, must be purchased. If the outdoor unit is a CITY MULTI R410A model, however, the outdoor unit can also supply the power (Not applicable to the PUMY model).

Unit that supplies the power to GB-24A	The number of connectable GB-24A	Remarks
PAC-SC51KUA	1 unit *1	• When only one GB-24A unit is connected Up to two other system controllers can be connected to the transmission line for central control. (Up to two ON/OFF remote controllers, up to four system remote controllers, up to four schedule timers, or up to four group remote controllers can be connected.)
PAC-SC50KUA	1 unit *1	• When only one GB-24A unit is connected Up to three other system controllers can be connected to the transmission line for central control. (Up to three ON/OFF remote controllers, up to six system remote controllers, up to six schedule timers, or up to six group remote controllers can be connected.)
R410A CITY MULTI outdoor unit (TB7) (connected to the transmission line for central control)	1 unit	• Replace CN41 (power-supply switch connector) with CN40 on only one outdoor unit. • Connectable number of indoor units will decrease by 4 units. * CITY MULTI units except the PUMY model (R410A outdoor units only) • When multiple outdoor units are connected to the system and the power to the outdoor unit is cut off to which the GB-24A is connected, that GB-24A will shut down.
CITY MULTI outdoor unit (TB3) (connected to the indoor/outdoor transmission line)	1 unit	• Connectable number of indoor units will decrease by 4 units. • When multiple outdoor units are connected to the system and the power to the outdoor unit is cut off to which the GB-24A is connected, that GB-24A will shut down.

*1: Each system allows the connection of only one GB-24A.
* Use PAC-SC50/51KUA (power supply unit) when multiple outdoor units are connected. Connect only the M-NET terminal (TB2) on PAC-SC50/51KUA to the M-NET terminal on GB-24A.

3 Product Features

1. Specification

Item	Contents	
Interface	M-NET: 30V/24V DC; 0.13/0.15A External I/O: 12V DC or 24V DC (External power supply) Ethernet: 10Base-T	
Environmental conditions	Temperature	Operating range: 32 to 104ºF / 0 to 40ºC Storage range: -4 to +140ºF / -20 to +60ºC
	Humidity	30-90%RH (No condensation)
Dimensions	$5^1/_8$ (H) x $9^7/_8$ (W) x $1^1/_2$ (D)in/130 (H) x 250 (W) x 38 (D) mm	
Weight	$2^1/_2$lb. / 1.1kg	
Installation Environment	In the control panel box (indoor) Install this product indoors. * This unit is installed and used in a business office, homes or equivalent environment.	

2. Outside dimensions

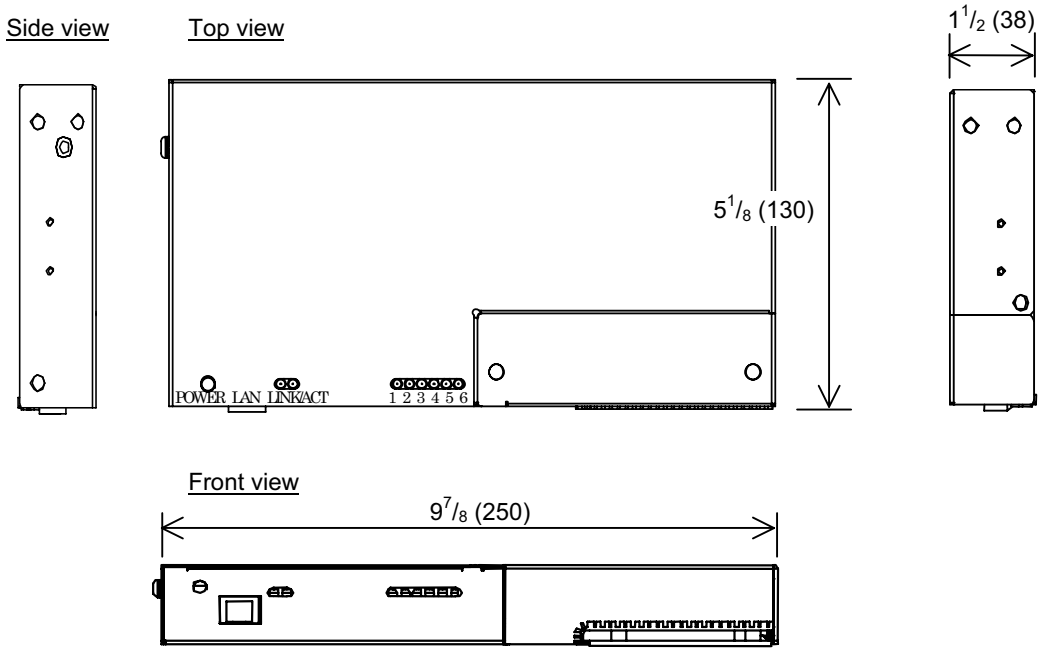


Fig. 3-1 Unit: in (mm)

L-fittings

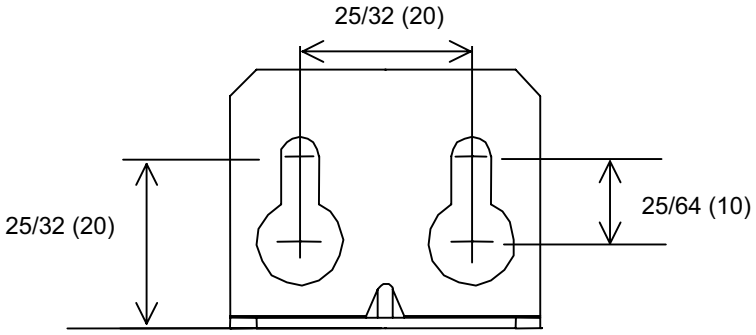
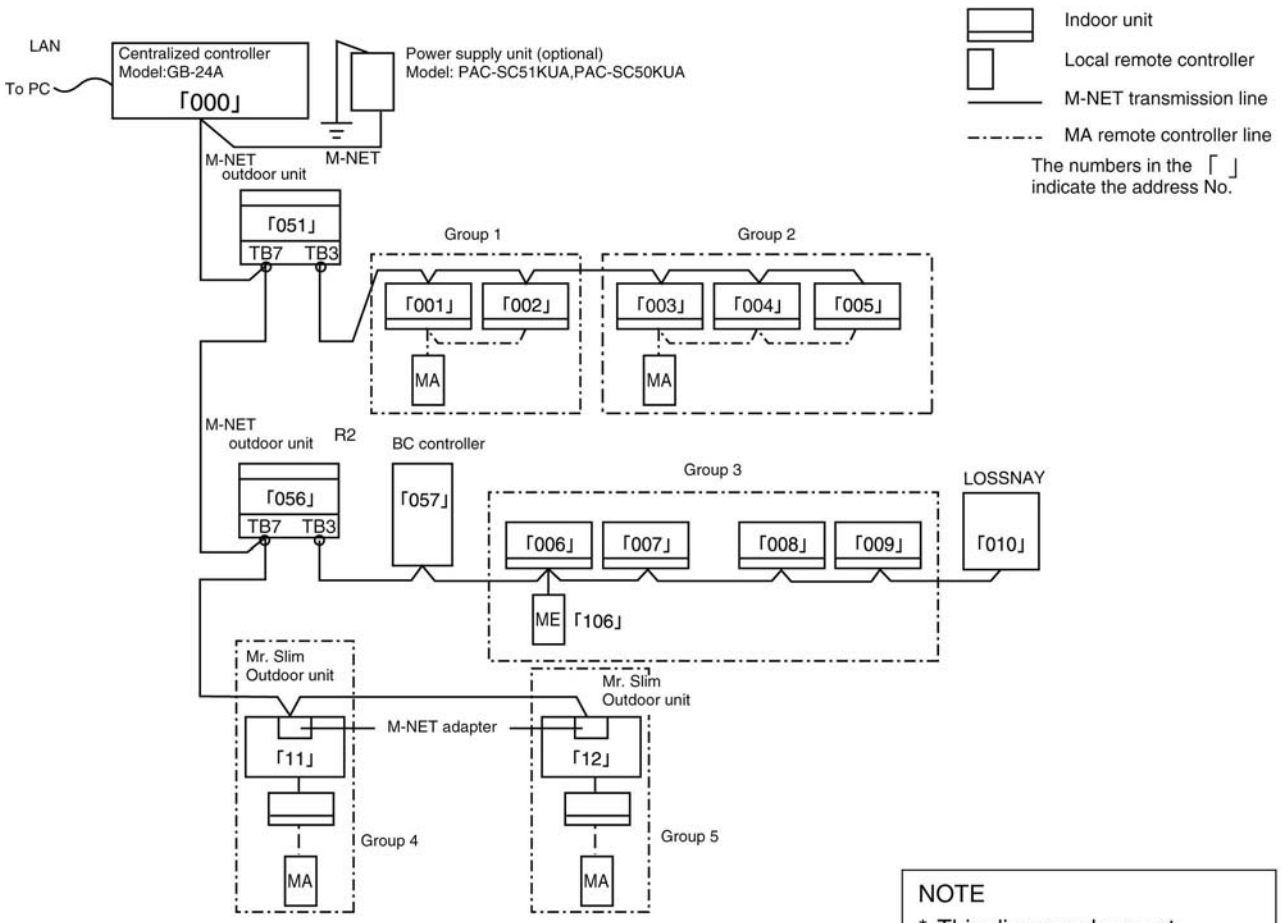


Fig. 3-2 Unit: in (mm)

4 System Diagram

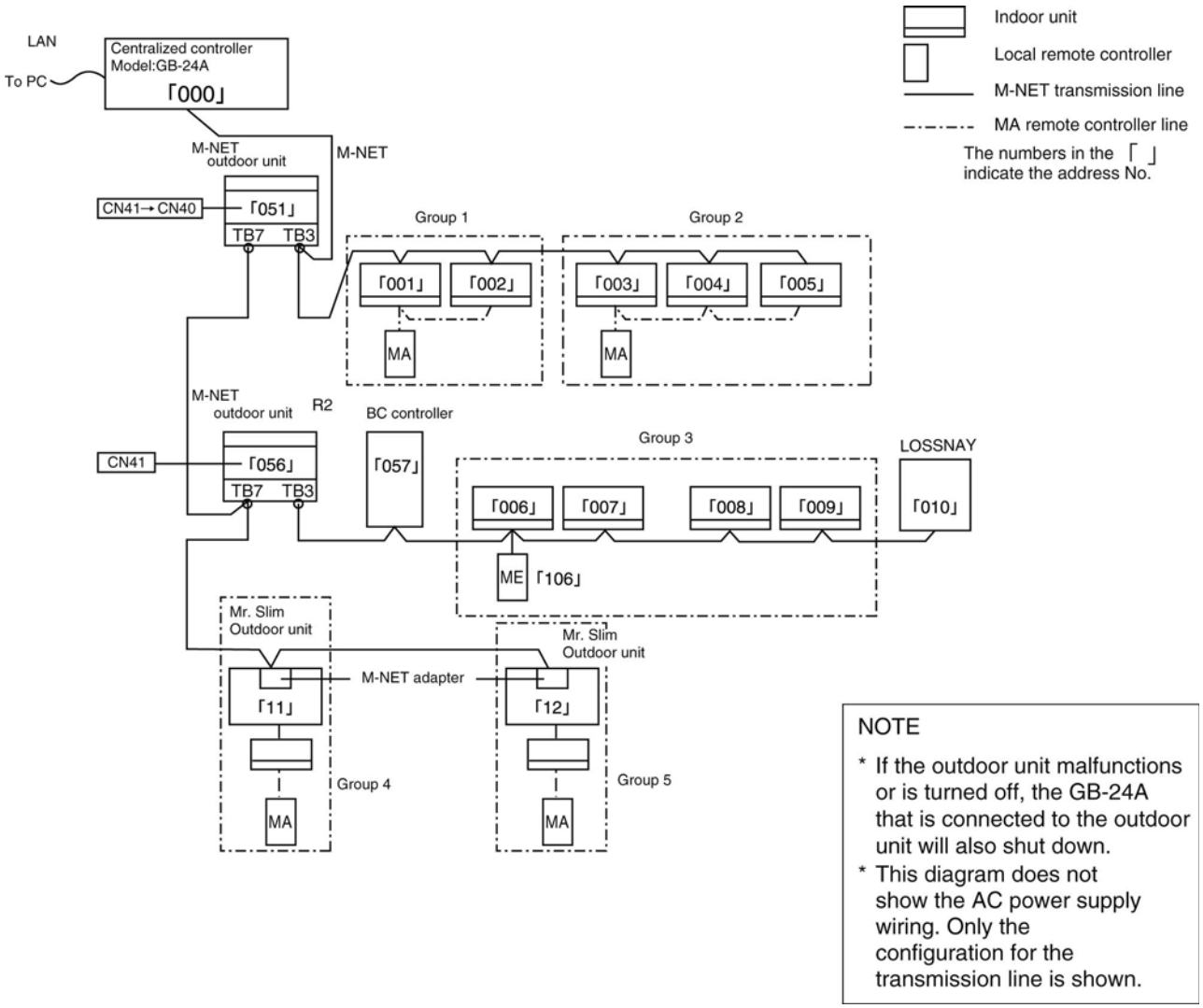
1. System with a power supply unit



* Address setting for each M-NET device (The address cannot be duplicated.)

	Address setting method	Address
Indoor unit	Set an indoor unit as the master unit, and set the rest of indoor unit sequentially address in the same group.	1-24
Outdoor unit	Min. indoor unit address in same refrigerant system + 50	51-74
BC controller/OS controller * OS: Subsidiary Outdoor unit	Set the outdoor unit address in same refrigerant system + 1 However, for Sub-BC controller, set the minimum indoor unit address that connects the local refrigerant piping + 50.	52-74
Mr.Slim Outdoor unit (M-NET adapter)	Same address as indoor unit. An M-NET adapter (sold separately) is required.	1-24
M-NET remote controller	Set to the minimum indoor unit master address in the same group + 100.	101-124
MA remote controller	Address setting is unnecessary.	-
OA processing unit/LOSSNAY	After setting all the indoor units, set an arbitrary address.	1-24

2. System in which power is supplied from an outdoor unit



* Address setting for each M-NET device (The address cannot be duplicated.)

NOTE

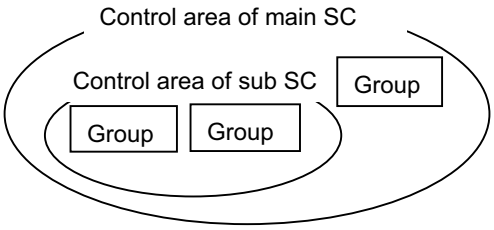
* This system controller is designed as a main controller, not as a sub controller.

● Main system controller (main SC)

The main system controller is designed to control all units, including units that other system controllers control. When there is only one system controller in a system, it will become the main system controller. Group setting or interlock setting can be made only with the main system controller.

● Sub system controller (sub SC)

The sub system controller that controls a local area is controlled overall by the main system controller.



This system controller is designed as a main controller, so it cannot be controlled by a main SC (such as Gateway).

5 Installation

1. Field-supplied parts

Please obtain the following parts before unit installation.

Field-supplied parts	Specification
Attaching screws	M4 screw x 4pcs (when using L-fittings) *1
Protective ground cable	Use sheathed vinyl cord or wire. Wire type : Wire should not be lighter than ordinary PVC sheathed flexible cord IEC 60227 (designation 60227 IEC 53) Wire size : 0.75mm^2 to 2mm^2 (AWG 18 to 14) Wire color : green/yellow
Round terminal	M4 screw size terminal (used for protective ground cable)
Transmission cable	Type of the cable: Shielded cable which comply with the following specifications or equivalent: ● CPEV: Φ1.2mm to Φ1.6mm ● CVVS: 1.25mm^2 to 2mm^2 (AWG 16 to 14) *CPEV: PE insulated PVC jacketed shielded communication cable *CVVS: PVC insulated PVC jacketed shielded control cable PE: Polyethylene PVC: Polyvinyl chloride

*1: When installing DIN rail, prepare 1.38inch (35mm) DIN rail. Mounting screws for DIN rail must be also field-supplied.

Applicable DIN rail types (IEC 60715/DIN 60715): TH35-7.5Fe, TH35-7.5Al

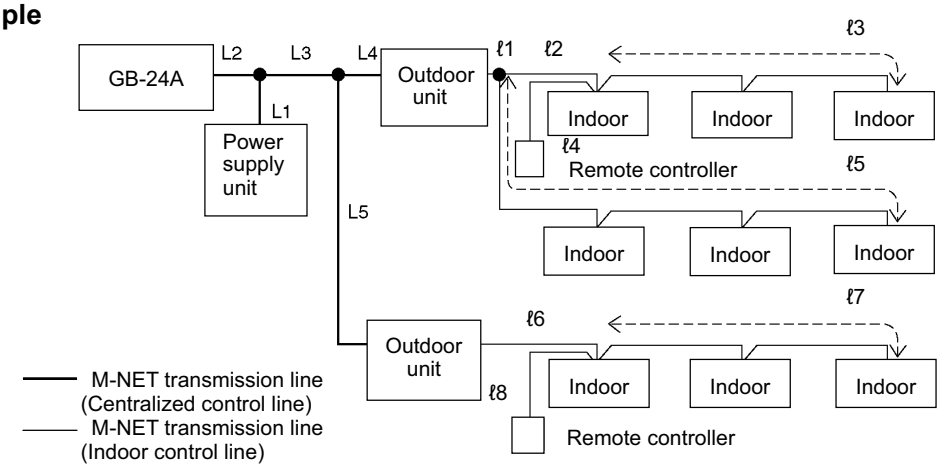
2. Maximum length of M-NET transmission lines

- Maximum length of M-NET transmission =1640 ft/500m *1
- Maximum power feeding length =656 ft/200m *1

NOTE

* 1: Specifications do not include the remote control cables up to 32 ft (10m) in length. If the remote control cable exceeds 32 ft (10m), the excess must be added to the total length in order to avoid exceeding the maximum length.

Example



1) Maximum length of M-NET transmission

1	L2+L3+L4+ℓ1+ℓ2+ℓ3 (ℓ4)	=1640 ft/500m
2	L2+L3+L4+ℓ1+ℓ5	=1640 ft/500m
3	L2+L3+L5+ℓ6+ℓ7 (ℓ8)	=1640 ft/500m
4	ℓ3 (ℓ4)+ ℓ2+ℓ1+L4+L5+ℓ6+ℓ7 (ℓ8)	=1640 ft/500m
5	ℓ5+ℓ1+L4+L5+ℓ6+ℓ7 (ℓ8)	=1640ft/500m

2) Maximum power feeding length for the indoor control line

1	ℓ1+ℓ2+ℓ3 (ℓ4)	=656 ft/200m
2	ℓ1+ℓ5	=656 ft/200m

3) Maximum power feeding length for the centralized control line

1	L1+L2	=656 ft/200m
2	L1+L3+L4 (L5)	=656 ft/200m

NOTE
If the remote controller cables (ℓ4, ℓ8) do not exceed 32 ft (10m), the length for ℓ4, ℓ8 do not have to be factored into the total length.

3. Installation

NOTE
Centralized controller GB-24A is not waterproof.

Installation methods for the centralized controller GB-24A are shown below.

Method1: Horizontal installation using L-fittings

Attach two L-fittings to GB-24A using the supplied screws (Fig. 5-1), then install GB-24A (Fig. 5-2).
Install the GB-24A in a control panel box (steel: thickness 3/64 in (1mm) or more).
When installing follow the control panel box clearance space specifications as shown in the Fig. 5-2.
(Install in an area capable of withstanding a 2 1/2 lb (1.1 kg) load.)

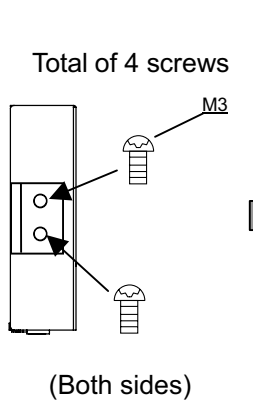


Fig. 5-1

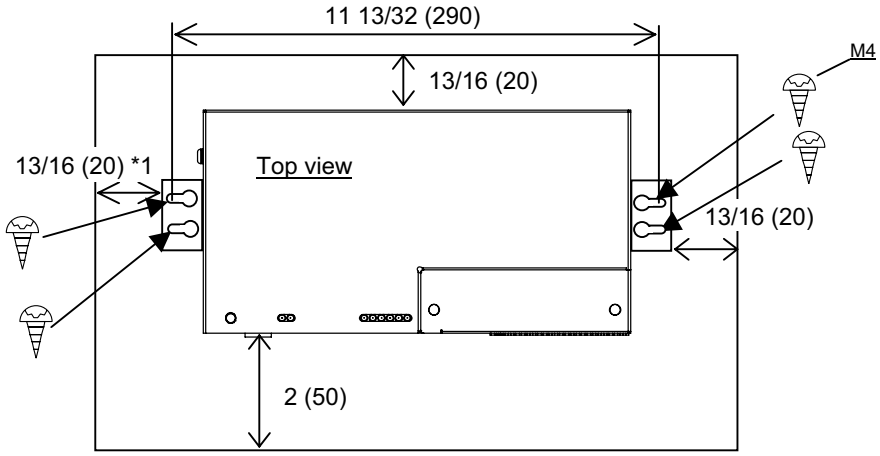


Fig. 5-2 unit: in (mm)

⚠ CAUTION

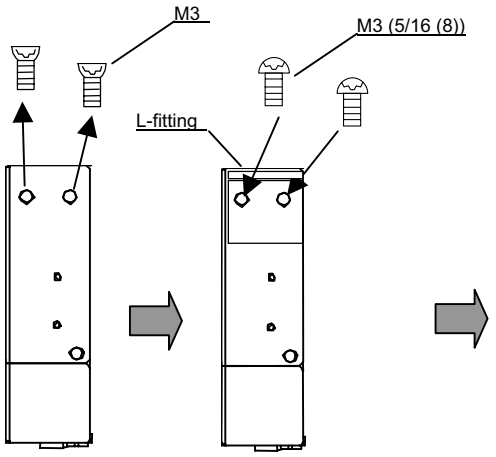
- L-fittings must be attached at two points on the unit.
- The unit with L-fittings must be attached at four points to prevent the unit from falling.

NOTE(*1)
When connecting the ground cable after GB-24A is installed, leave some space for mounting screws.
When there is little space for mounting screws, connect the ground cable before GB-24A is installed.

Method2: Vertical installation using L-fittings

After removing the screws on GB-24A, attach two L-fittings to the unit using the supplied screws (Fig. 5-3), then install (Fig. 5-4).
Install the GB-24A in a control panel box (steel : thickness 3/64 in (1mm) or more).
When installing, follow the control panel box clearance space specifications as shown in the Fig. 5.4.
(Install in an area capable of withstanding a 2 1/2 lb (1.1 kg) load.)

(Reference) When GB-24A is installed inside the control board, it is recommended that it be installed after the wiring work, so that the installation becomes easy.



(Both sides)

Fig. 5-3

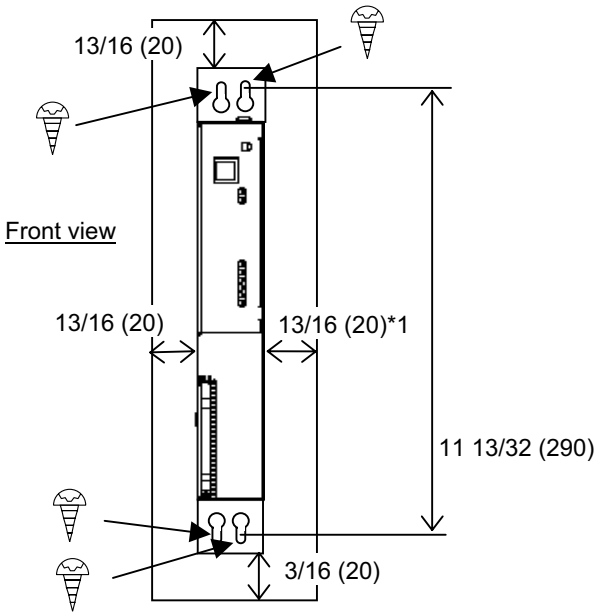


Fig. 5-4 unit: in (mm)

> ⚠ **CAUTION**
> - L-fittings must be attached at two points on the unit.
> - The unit with L-fittings must be attached at four points to prevent the unit from falling.

Method3: Installation using DIN rail

GB-24A can be attached to DIN rail (1.38inch (35mm)).
Attach DIN rail attachment to GB-24A using the supplied screws (Fig. 5-5), then install GB-24A (Fig. 5-6).
Install the GB-24A in a control panel box (steel : thickness 3/64 in (1mm) or more).
When installing, follow the control panel box clearance space specifications as shown in the Fig. 5-6.
(Install in an area capable of withstanding a 2 1/2 lb (1.1 kg) load.)

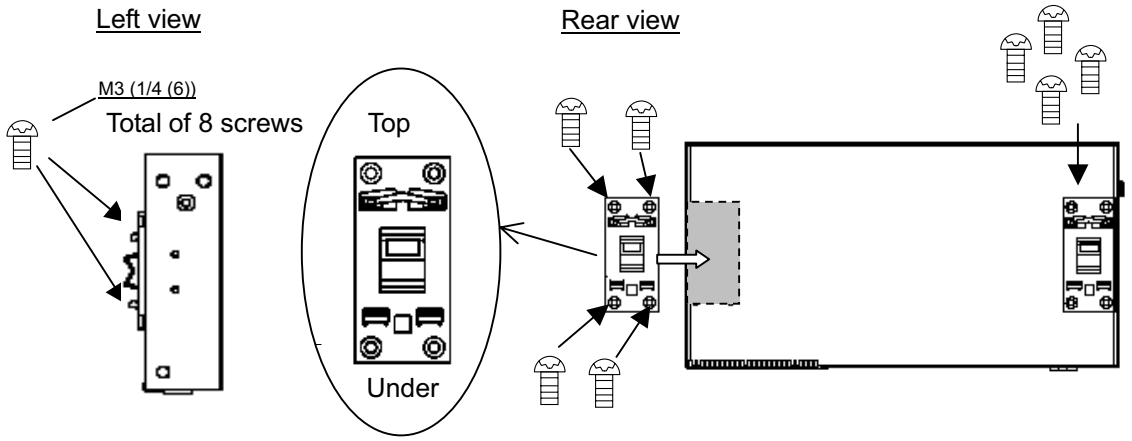


Fig. 5-5 unit: in (mm)

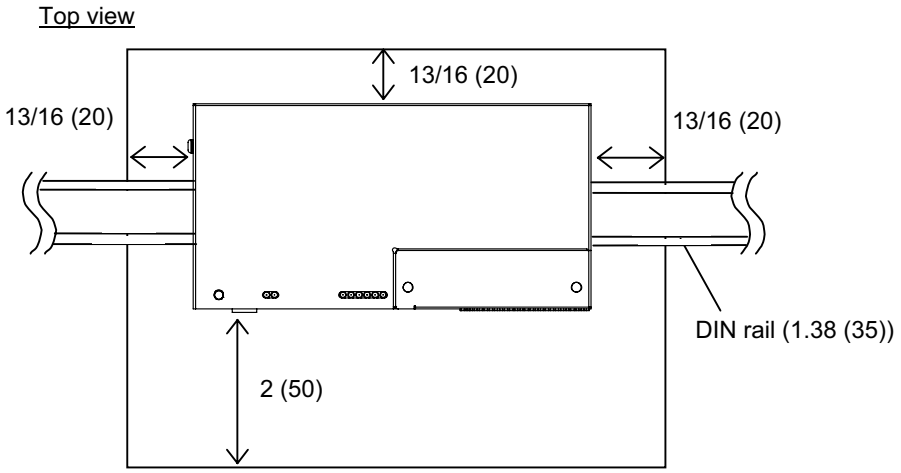


Fig. 5-6 unit: in (mm)

> ⚠ **CAUTION**
> - DIN rail attachment must be attached at four points on the unit using two M3 roundhead screws.
> - To secure, screw pitch of 7.88inch (200mm) or less is required when DIN rail is attached on the control board.
> - Use GB-24A in a place where it is not subjected no vibrations. Use studs as necessary to attach GB-24A.

Installation and removal of GB-24A when attached to DIN rail

1) Installation

Position the top of the attachment on the DIN rail, and push the bottom of the unit in the direction of the arrow shown in the figure below.

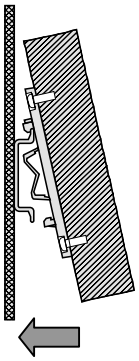


Fig. 5-7

> ⚠ **CAUTION**
> - Check that the attachment is secure on the DIN rail.

2) Removal

Push the unit down and pull it in the direction of the arrow shown in the figure below.

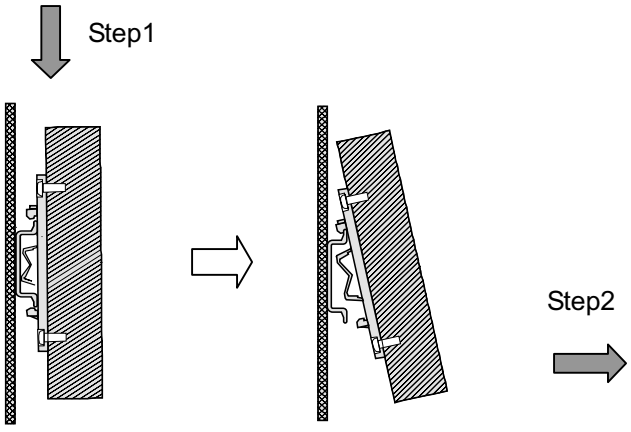


Fig. 5-8

6 Wiring

⚠ WARNING

- All electric work must follow local regulations.
  Improper electrical work may result in electric shock or fire.
- Shut off the power source of the unit and all other units to be connected to the power supply unit before wiring.

⚠ CAUTION

- Do not connect the AC power line to the M-NET terminal blocks of this device, otherwise the unit may fall.

1. Ground cable

Connect the protective ground cable to the ground terminal as shown in the Fig. 6-1. Attach the ring terminal (M4) to the ground cable, and connect the cable to the ground terminal on the unit.

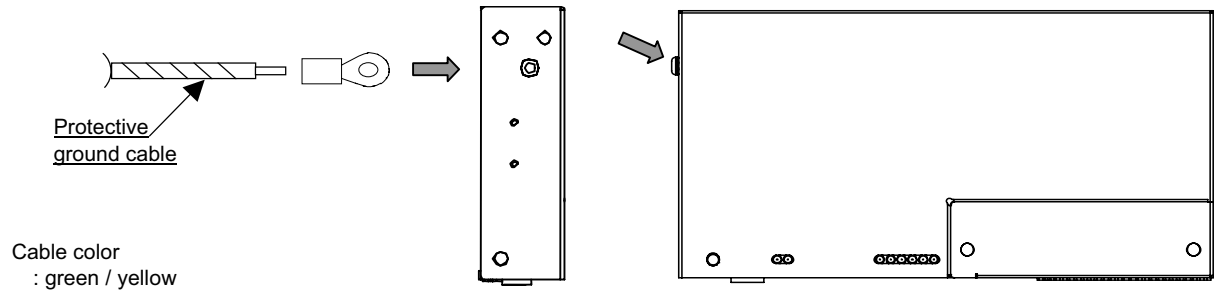


Fig. 6-1

2. Cover Removal and Installation

When removing the cover, remove the two mounting screws and remove it.
When installing the cover, install it by tightening the two screws.

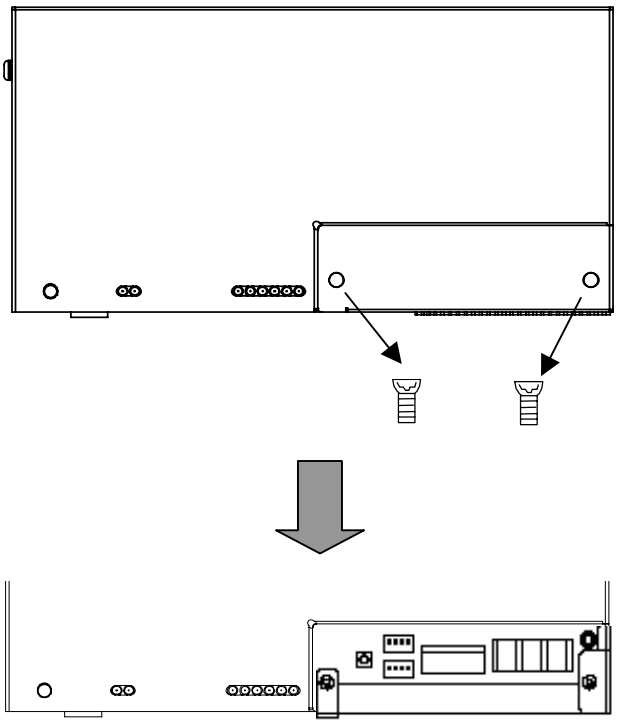


Fig. 6-2

3. M-NET transmission line

Connect the M-NET transmission line to the A, B (non-polarity) and S (shield) terminal block, as shown in Fig. 6-3.

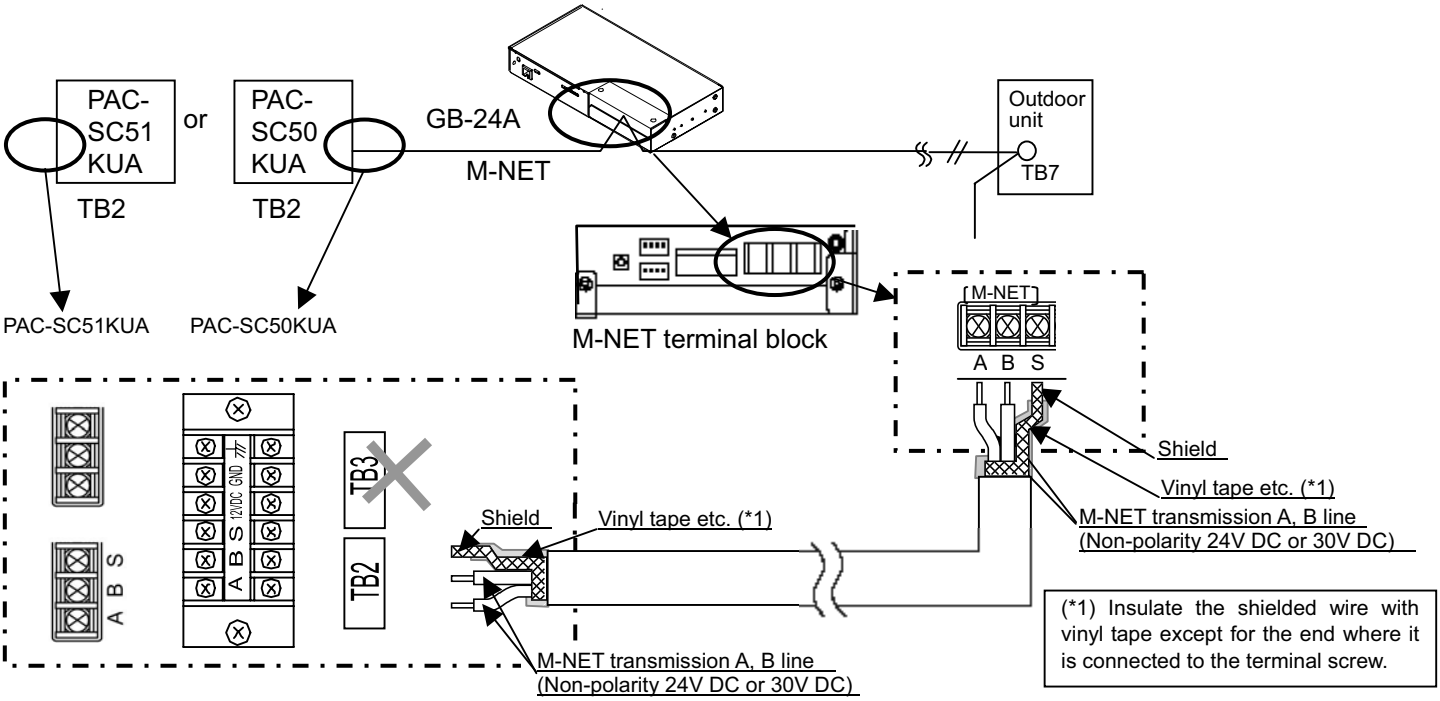


Fig. 6-3

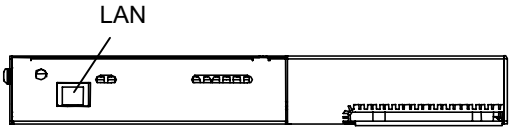
⚠ CAUTION

- DC power to the M-NET transmission line is supplied from either the power supply unit PAC-SC51KUA/PAC-SC50KUA or R410A CITY MULTI outdoor unit *1. When supplying the power from the R410A CITY MULTI outdoor unit*1 to the transmission line for central control (TB7), disconnect the male connector from the female power supply switch connector (CN41: no power supply) and connect it to the female power supply switch connector (CN40: power supply) on only one of the outdoor units. For further details, refer to the transmission manual of the outdoor unit. Not doing so may cause unit failure or fire.
  *1: CITY MULTI R410A outdoor units (except PUMY model) only.
- Securely connect the wiring using the specified cables and attach them so that the stress from the cables is not applied to the terminal connection sections. If the cables aren't securely attached, it may cause heat generation, a fire, etc.

4. LAN connection

Connect the LAN cable to the LAN connector of the GB-24A unit.

- Field-supply the LAN cable, and use an enhanced category 5 UTP cable.
- For a description of the IP address setting method, refer to section 7 Initial setting .
- LAN is 10 BASE-T Specification.
- Maximum wiring length from HUB to GB-24A is 328 ft (100m).
- GB-24A is connected to the monitoring PC via HUB.



NOTE

- Perform the LAN wiring before installation, and wire up to the unit following the same method of wiring as for the M-NET transmission line.
- When a LAN is already connected, choose an IP address after consulting with the system administrator, and connect the LAN port after changing the IP address.
- Space for the connector and wiring is required. Refer to section 5 Installation .

7 Initial Setting

Initial setting steps

Step 1: IP address setting
Step 2: License number registration *License must be registered before use.
Step 3: Group setting
Step 4: Other settings
Step 5: Test run

Note

- Initial setting can be set via the web through LAN. More functions can be set with the initial setting web. The license is not registered at factory shipment, and monitoring or operation cannot be performed on the air conditioner.
  The functions that can be initialized using this unit are described in this manual. Refer to the initial setting web operation manuals for more information.
- The format in which the Web page address for each GB-24A is expressed on the Initial Setting Web, as well as the default setting user name and password are shown below.

http:// [IP address of the GB-24A]/g-50/ administrator.html

Note: For example, type “http://192.168.1.1/g-50/administrator.html” if the GB-24A IP address is [192.168.1.1].

User	Default user name	Default password
Maintenance user	initial	init



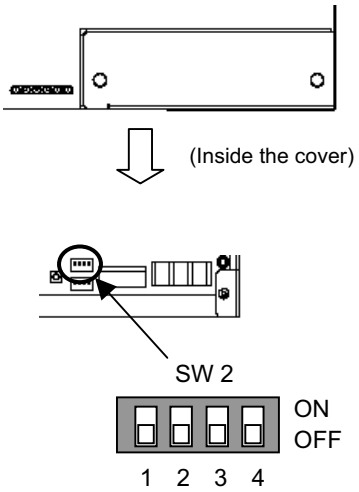
Function list of GB-24A, and the Initial Setting Web.

Items	GB-24A	Initial Setting Web	Remarks
M-NET address setting		√	The default value is 0.
IP address setting	√ (simple setting)	√	*The settings of the simple setting have the priority over other settings.
Function selection		√	Presence/absence of K transmission converter connection*1, local peration prohibition setting, and external input mode
Group registration		√	
Registration of interlocked operation with the ventilation unit		√	
Service switch	√		
Other settings		√	Available functions vary depending on the tool.

*1: K transmission converter cannot be used. Select “Not used” for the K-control Units setting in the M-NET Settings window.

1. Setting the IP address with dip switches

IP addresses between 192.168.1.1 and 15 can be set using the 4-pin dip switch on SW2.
Set this switch before turning the power on.



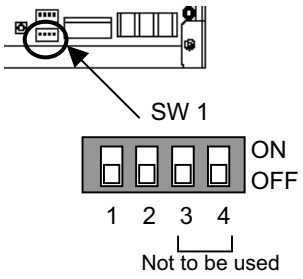
1	2	3	4	Contents (IP address)
OFF	OFF	OFF	OFF	Address that is set with Initial Setting Web (Default IP address setting is 192.168.1.1 (Factory setting))
OFF	OFF	OFF	ON	Starts from 192.168.1.1
OFF	OFF	ON	OFF	Starts from 192.168.1.2
OFF	OFF	ON	ON	Starts from 192.168.1.3
OFF	ON	OFF	OFF	Starts from 192.168.1.4
OFF	ON	OFF	ON	Starts from 192.168.1.5
OFF	ON	ON	OFF	Starts from 192.168.1.6
OFF	ON	ON	ON	Starts from 192.168.1.7
ON	OFF	OFF	OFF	Starts from 192.168.1.8
ON	OFF	OFF	ON	Starts from 192.168.1.9
ON	OFF	ON	OFF	Starts from 192.168.1.10
ON	OFF	ON	ON	Starts from 192.168.1.11
ON	ON	OFF	OFF	Starts from 192.168.1.12
ON	ON	OFF	ON	Starts from 192.168.1.13
ON	ON	ON	OFF	Starts from 192.168.1.14
ON	ON	ON	ON	Starts from 192.168.1.15

NOTE

- When setting IP addresses with the Initial Setting Web, set all four dip switches on SW2 to OFF.
- If the IP address of GB-24A is forgotten, check the IP address that is registered on the monitoring PC (Web). GB-24A can be started by changing the setting of SW2 on GB-24A IP address, and using a temporary arbitrary fixed IP address. It is recommended to note the IP address on the unit, so that the IP address of GB-24A is available at all times.

2. Setting the service switch

The switches must be OFF for normal use. The switch setting change operates when the power is turned on next time.



1	2	Contents	Remarks
OFF	OFF	Starts with the normal mode	*This setting is for normal use.
ON	OFF	-	Setting is prohibited.
OFF	ON	-	Setting is prohibited.
ON	ON	Starts with the update mode	*The software can be updated with the normal mode. If the update fails, or the software does not work properly, use this setting to update the software again.

*SW1-3 and SW1-4 are always OFF.

8 Test Run

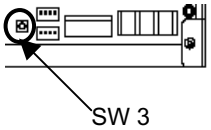
1. Collective operation, ON/OFF

* After setting the group or interlocked setting, confirm that the controller has started up, and then perform a test run.
* It may take approx. 10 minutes for local remote controller operation to be enabled after the power is turned ON. In this case, press the collective ON/OFF switch on the controller to enable immediate local remote controller operation.

(Test run procedure)

1. Turn ON the power to the controller and all the units.
2. When the LED1 on the main unit turns OFF, press SW3. The units registered in the same group will start a group operation. When the group operation starts, the LED2 turns ON.
3. Confirm operation during the test run.
4. When each unit has been confirmed, stop the unit with the controller or local remote controller.

* Refer to the installation manual for the connected indoor unit for details on the test run method.
* The test run mode cannot be selected with a collective ON/OFF switch (SW3). The operation mode will be the current operating mode.



Note

- Use the local remote controller to change the mode to the “Test run” mode.
- An operation mode other than “Test run” can be selected on the Web browser.
- The format in which the Web page address for each GB-24A is expressed on the Web browser, as well as the default setting user name and password are shown below. For further details, refer to the manual for the Web browser.

http:// [IP address of the GB-24A] / administrator.html

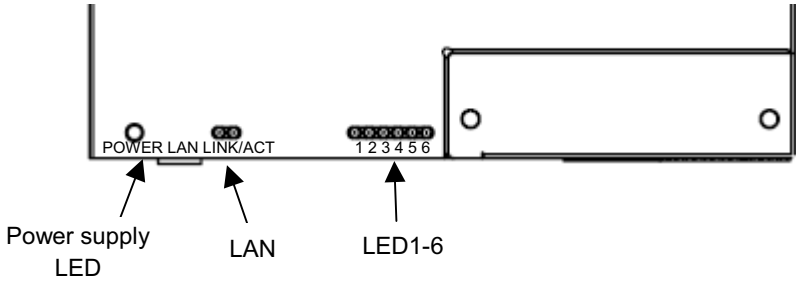
Note: For example, type “http://192.168.1.1/administrator.html” if the GB-24A IP address is [192.168.1.1].

User	Default user name	Default password
Managers	administrator	admin

2. Service LED display

The LED displays the operation status of the unit as follows.

LED No.	Items	Contents
Power supply LED	Power status	ON : Power is supplied / OFF: Power is cut off
LAN	LAN LINK	ON : During LINK / OFF: No LINK
LAN	LAN ACT	Flash : During communication / OFF: No communication
LED1	Start-up	ON : Start-up not completed / OFF: Start-up completed
LED2	Operation ON/OFF	ON : 1 or more units are ON / OFF: All OFF
LED3	Error	Flash : Error occurred on 1 or more units / OFF: Normal state
LED4	(not defined)	-
LED5	(not defined)	-
LED6	M-NET communication (transmission)	Flash : During communication / OFF: No communication



9 System wiring example

Power supply

* GB-24A requires 24-32V DC power supply (M-NET) for centralized control transmission use, operation, and LAN function use.

(1) Power supply of 24-32V DC from power supply unit PAC-SC50(51)KUA.
Power supply unit PAC-SC50(51)KUA is recommended for GB-24A.See the diagram below ; for details, please refer to the installation Manuals of PAC-SC50(51)KUA.

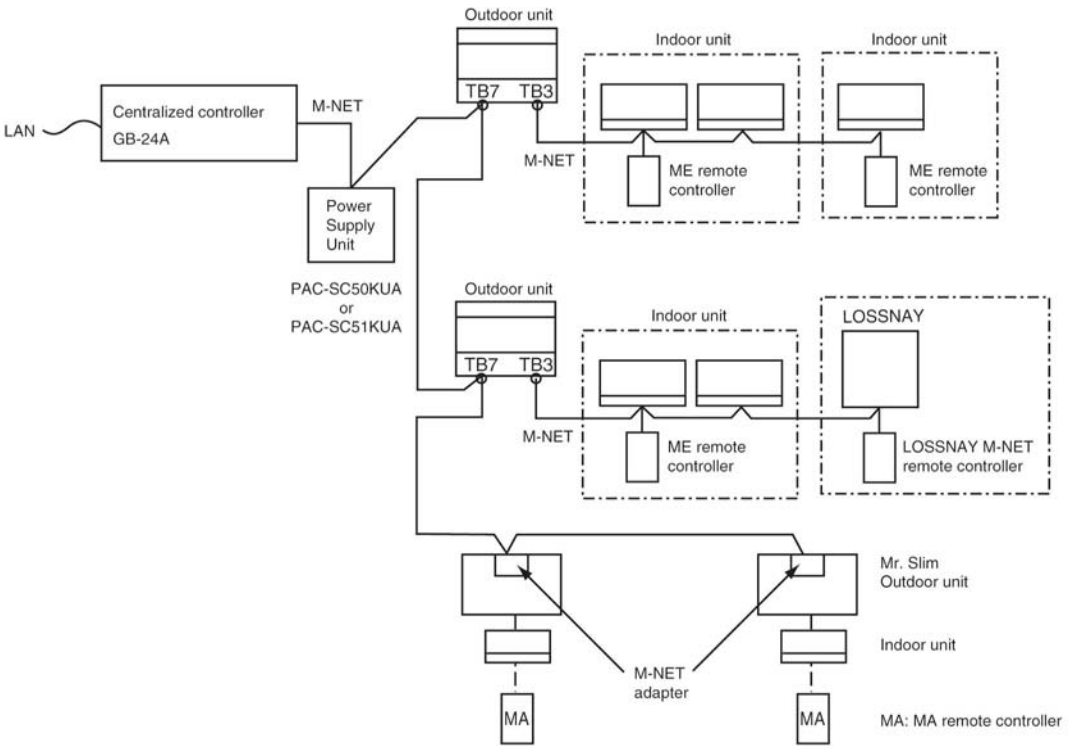


Fig. 9-1 Basic system with GB-24A and PAC-SC50(51)KUA.

(2) Power supply of 30V DC from outdoor unit connector TB7.

As shown on Fig. 9-2, GB-24A receives power supply of 30VDC from R410A CITY MULTI outdoor unit connector TB7.

If one of the outdoor units should change its power supply switch CN41 to CN40.

*NOTE: This method applies to R410A CITY MULTI outdoor unit except PUMY (S series).

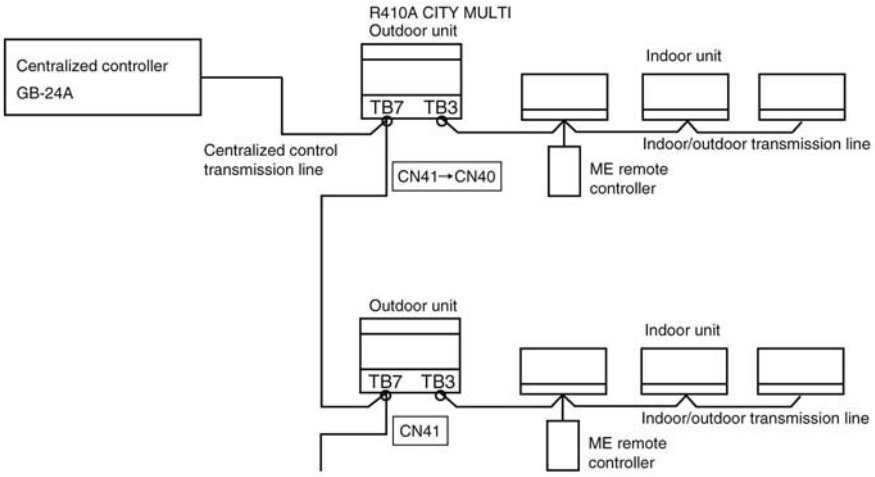


Fig. 9-2 GB-24A, TB7 system.

(3) Power supply of 30V DC from outdoor unit connector TB3.

GB-24A can also receive power supply from R410A/R407C/R22 outdoor unit connector TB3. However, if the outdoor unit shuts down, GB-24A will also automatically shut down. Therefore, this system is not recommended for air conditioning system with multiple outdoor units.

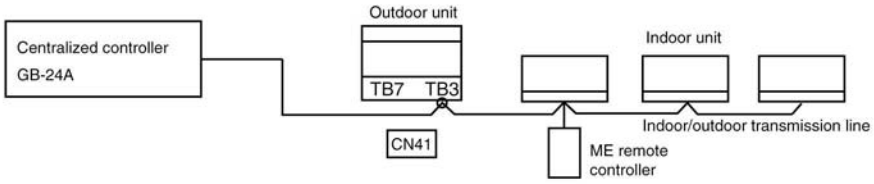
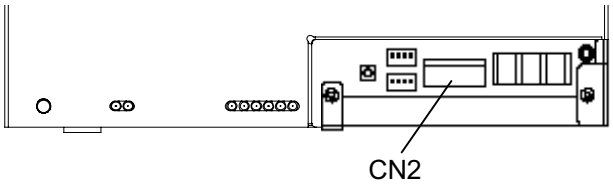


Fig. 9-3 GB-24A, TB3 system.

10 External Input/Output Usage

1. External signal input function

* External signal input requires the external I/O adapter (Model: PAC-YG10HA), sold separately.

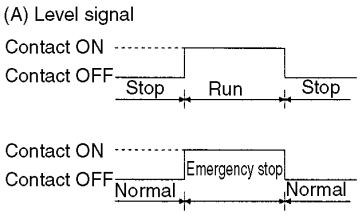


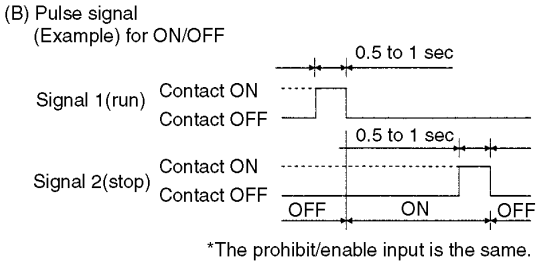
(1) External input

Emergency stop/normal, run/stop and prohibit/enable of local remote controller operation can be controlled for all air conditioners on a system by using a voltage (12V DC or 24V DC) contact signal from an external source. (Select with the function select setting using the Initial Setting Web.)

No.	External signal input function	Remarks
1	Do not use external input signal (factory setting)	
2	Execute emergency stop/normal with level signal	Local remote controller ON/OFF operation, and the controller ON/OFF operation and prohibit/enable change operations will be prohibited during emergency stop.
3	Perform ON/OFF with level signal	Local remote controller ON/OFF operation, and the controller ON/OFF operation and prohibit/enable change operation will be prohibited.
4	Perform ON/OFF, prohibit/enable with pulse signals	Set the pulse width while the contact is ON to 0.5 to 1 sec.

(2) Level signal and pulse signal (12V DC or 24V DC)





*The prohibit/enable input is the same.

(3) External input specification

CN2	Lead wire	Emergency stop/normal level signal	ON/OFF, level signal	ON/OFF, prohibit/enable pulse signal
No. 5	Orange	Emergency stop/normal input	ON/OFF input	ON input
No. 6	Yellow	Not used	Not used	OFF input
No. 7	Blue	Not used	Not used	Local remote controller operation prohibit input
No. 8	Gray	Not used	Not used	Local remote controller operation enable input
No. 9	Red	External DC source "+" "12V DC" or "24V DC"		

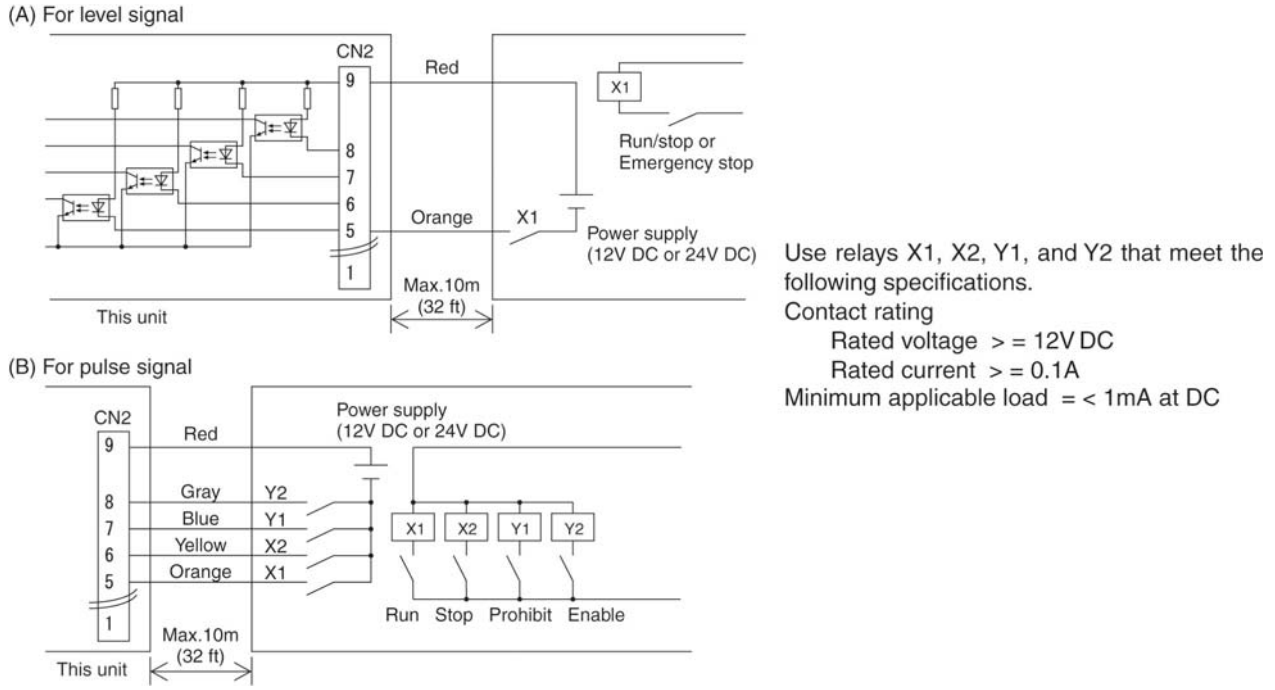
(A) For level signal

1. When the emergency stop/normal signal is selected, the status will change from normal to emergency stop when the external input signal contact changes from OFF to ON, and will change from emergency stop to normal when the contact changes from ON to OFF. Emergency stop signal will bring the air conditioners to stop, and canceling the emergency stop will not automatically reset these units. To return to the previous operation status, they must be manually turned back on.
2. When the ON/OFF signal is selected, the status will change from OFF to ON when the external input signal contact changes from OFF to ON, and will change from ON to OFF when the contact changes from ON to OFF.

(B) For pulse signal

1. Even if the ON signal is input during ON, the status will remain ON.
2. If the local remote controller is prohibited, the ON/OFF operation mode and temperature setting operations by the local remote controller will be prohibited.
3. Set the pulse width (contact ON time) to 0.5 to 1 sec.

(4) Recommended circuit example



Use relays X1, X2, Y1, and Y2 that meet the following specifications.
Contact rating
Rated voltage > = 12V DC
Rated current > = 0.1A
Minimum applicable load = < 1mA at DC

1. The contact relay, DC power source, extension cable, etc, must be prepared separately at the site.
2. The connection cable can be extended up to 32 ft (10m). (Use a 0.3mm2 [AWG 22] or larger wire.)
3. Expose the extra cable near the connector, and securely insulate the exposed section with tape, etc.

2. External signal output function

* External signal output requires the external I/O adapter (Model: PAC-YG10HA) sold separately.

(1) External output

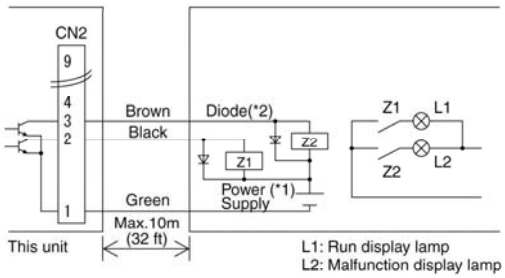
When one or more air conditioners are operating, the “ON” signal will be output, and if a malfunction occurs in one or more air conditioners, the “Malfunction” signal will be shown.

(2) External output specifications

CN2	Lead wire	Description of each terminal
No. 1	Green	Common (External ground)
No. 2	Black	ON/OFF
No. 3	Brown	Malfunction/normal

1. “ON” signal and “Malfunction” signal will both be shown.

(3) Recommended circuit example



Use Z1 and Z2 relays having the following specifications.
Operation coil
Rated voltage : 12V DC, 24V DC
Power consumption : 0.9W or less
(*1) Include a power supply separately according to the relay being used. (12V DC or 24V DC)
(*2) Always insert a diode on both ends the relay coil.

1. Each element will turn on while ON operation or a malfunction occurs.
2. The connection cable can be extended up to 32 ft (10m).
3. The relays, lamps, diodes and extension cables, etc, must be prepared separately at the site.

NOTE:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide resonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no quarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

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

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