AIRSTAGE™ J-II

Variable Refrigerant Flow System

R410A Refrigerant
INVERTER

5. CONTROL SYSTEM

CONTENTS

• •

5. CONTROL SYSTEM

1. CONTROL SYSTEM

1-1. LINE UP OF CONTROLLERS

■ FEATURES OF CONTROL SYSTEM

Installation Work Saving

Simplified wiring and reduced installation cost by the use of non-polar 2-core transmission line.

Control System Configuration Expansion

Optimum system configuration by various controller combinations, allowing for various applications and future expansion.

Easy Operation

Advanced control functions can be set up with the easy-to-use setting operation.

Free System Configuration

Up to 400 indoor units are connectable in one system. System is adaptable to various applications, from small to large buildings.

Flexible Control System to Meet a Variety of Needs.

Air Conditioning Central Control

System Controller, Touch Panel Controller, Central Remote Controller and Group Remote Controller specially designs for centralized control.

System Controller

UTY-APGX

High performance and optimum control system for all building applications

A high degree of building air conditioning management is possible including electricity charge apportionment- and numerous data management functions as well as standard equipment monitoring and control.

Touch Panel Controller

UTY-DTG∗

Functionality in a compact housing with built-in schedule timer

It allows operation and monitoring to be achieved from the central control room, at each floor, by each tenant, or in the plant room.

Central Remote Controller

UTY-DCG∗

Central control of small- and medium-sized buildings and tenants.

The operation status of all connected indoor units can be viewed at a glance on a large LCD monitor to simplify individual control to batched control.
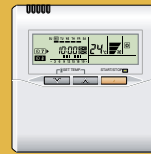
Group Remote Controller

UTY-CGG∗

Group control of indoor units with simple operation

Network convertor (UTY-VGGX) is required to connect group remote controllers to a VRF system.

Air Conditioning Individual Control

A range of Remote Controllers suitable for a wide range of individual control situations, using various built-in timers

Wired Remote Controller

UTY-RNK∗

The room temperature can be controlled by being detected the temperature accurately with built-in thermo sensor.

Simple Remote Controller (With Operation mode)

UTY-RSK∗

Compact remote controller concentrates on the basic functions such as Start/Stop, Fan Control, Temperature Setting and Operation mode.

Simple Remote Controller (Without Operation mode)

UTY-RHK∗

Compact remote controller concentrates on the basic functions such as Start/Stop, Fan Control and Temperature Setting.
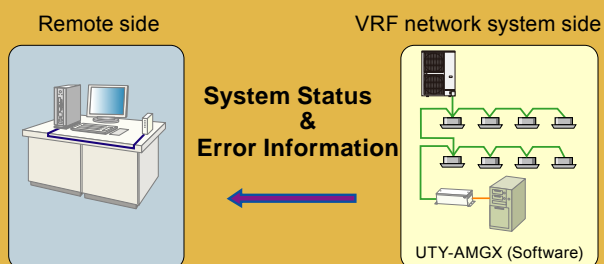
Wireless Remote Controller

UTY-LNH∗

Simple and sophisticated operations with a choice of 4 daily timers

Web Monitoring Tool

Trouble-shooting is performed by monitoring each air conditioning unit remotely during periodical system checks.

Remote side   VRF network system side

System Status & Error Information

UTY-AMGX (Software)

Error notification can be automatically transmitted to several locations using the internet∗.
Requires either a dedicated internet connection∗ or public telephone line.

∗Fixed global IP address is required.

System Controller

Suitable for remote operation and control of large sites with many buildings.

Client

Internet or **Telephone Line** or **LAN**

Remote controlled side
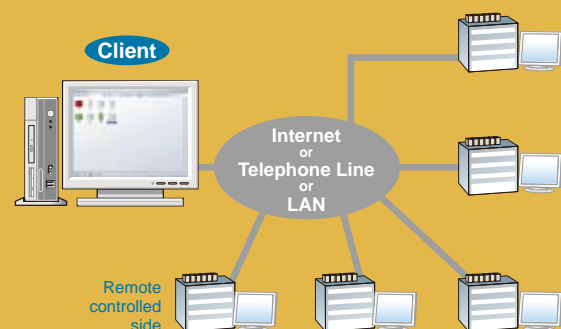
Central air conditioning control among several building can be managed via internet.
Remote controlled sites up to 10.

1-2. CONTROL SYSTEM DESIGN

■ ADVANCED INTEGRATED CONTROL SYSTEM

Building Management

General-purpose Building Control Controller

Connectable to various sized BMS/BAS *1

or

Internet or Public Telephone Line

Remote / Monitoring side

— Transmission line (LONWORKS® Network)

— LONWORKS® Network
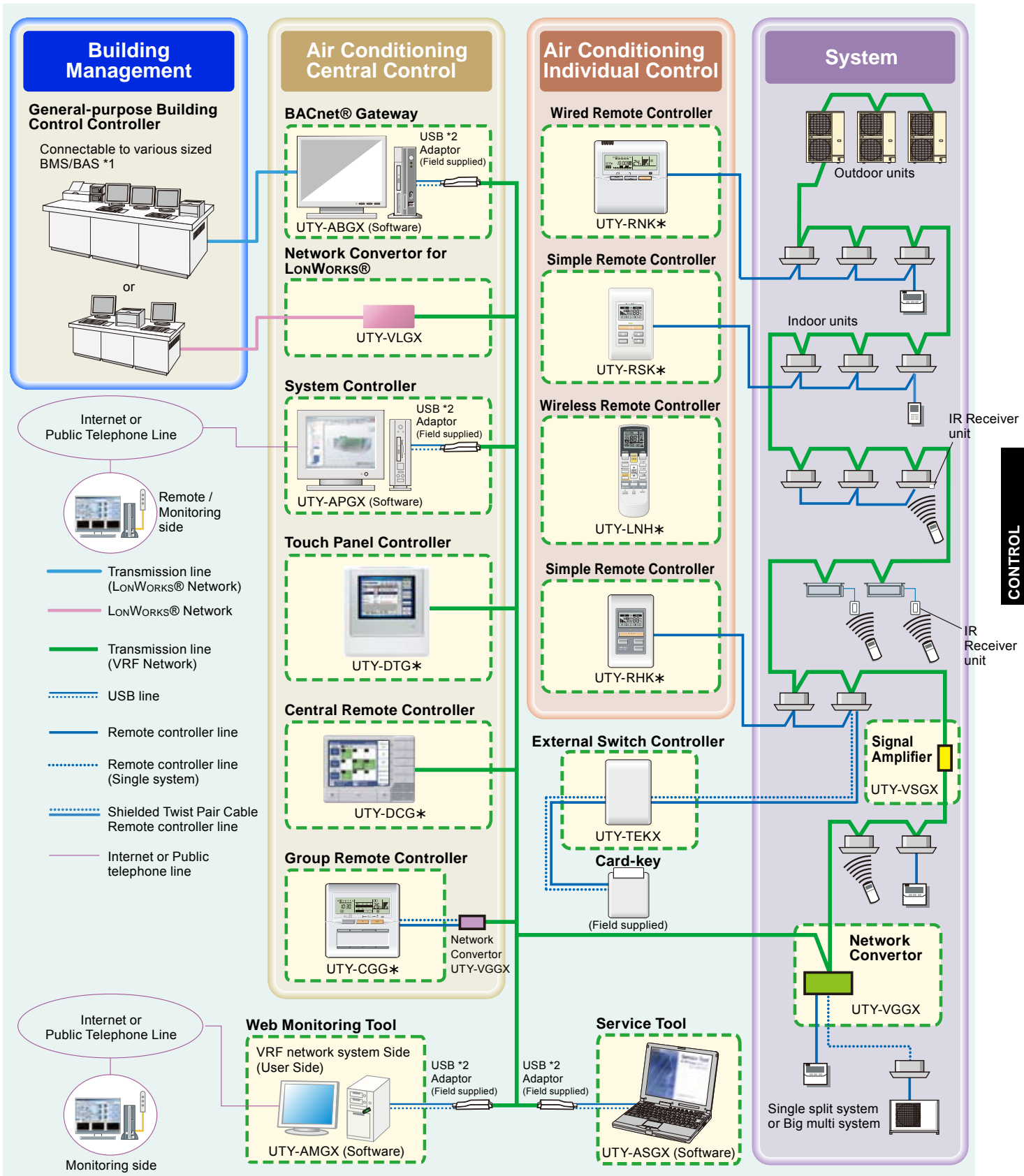
— Transmission line (VRF Network)

····· USB line

— Remote controller line

····· Remote controller line (Single system)

····· Shielded Twist Pair Cable Remote controller line

— Internet or Public telephone line

Air Conditioning Central Control

BACnet® Gateway
USB *2 Adaptor (Field supplied)
UTY-ABGX (Software)

Network Convertor for LONWORKS®
UTY-VLGX

System Controller
USB *2 Adaptor (Field supplied)
UTY-APGX (Software)

Touch Panel Controller
UTY-DTG∗

Central Remote Controller
UTY-DCG∗

Group Remote Controller
UTY-CGG∗
Network Convertor UTY-VGGX

Air Conditioning Individual Control

Wired Remote Controller
UTY-RNK∗

Simple Remote Controller
UTY-RSK∗

Wireless Remote Controller
UTY-LNH∗

Simple Remote Controller
UTY-RHK∗

External Switch Controller
UTY-TEKX

Card-key
(Field supplied)

System

Outdoor units

Indoor units

IR Receiver unit

IR Receiver unit

Signal Amplifier
UTY-VSGX

Network Convertor
UTY-VGGX

Single split system or Big multi system

Internet or Public Telephone Line

Monitoring side

Web Monitoring Tool
VRF network system Side (User Side)
USB *2 Adaptor (Field supplied)
UTY-AMGX (Software)

Service Tool
USB *2 Adaptor (Field supplied)
UTY-ASGX (Software)

*1: BMS/BAS : Building Management System / Building Automation System.
*2: U10 USB Network Interface - TP/FT-10 (Echelon® Corporation)

1-3. SYSTEM CONFIGURATION EXAMPLES
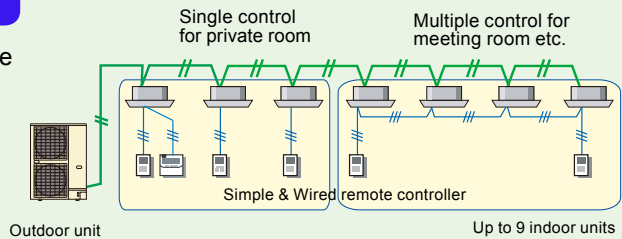
■ INDIVIDUAL CONTROL

Wired Remote Controller

- Up to 9 indoor units can be controlled with one wired remote controller.
- Wired, simple, and wireless remote controllers can be used jointly.
- Two remote controllers can be connected with single indoor unit.

Single control for private room

Multiple control for meeting room etc.

Outdoor unit

Wired remote controller
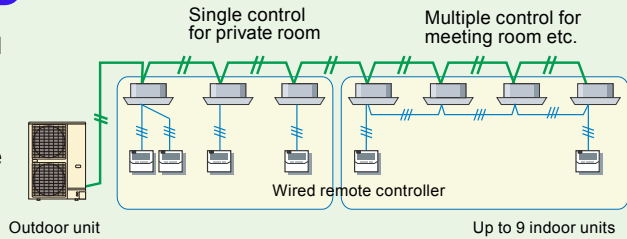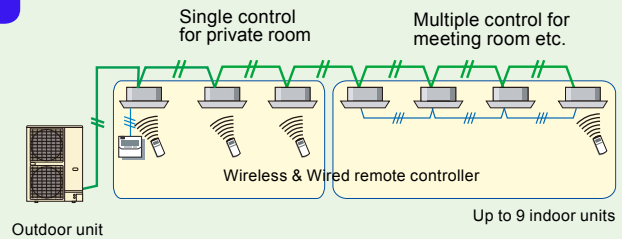
Up to 9 indoor units

Simple Remote Controller

- Up to 9 indoor units can be controlled with one simple remote controller.
- Enables easy control of basic functions by the hotel or office guest.
- Two remote controller can be connected with single indoor unit.

Single control for private room

Multiple control for meeting room etc.

Outdoor unit

Simple & Wired remote controller
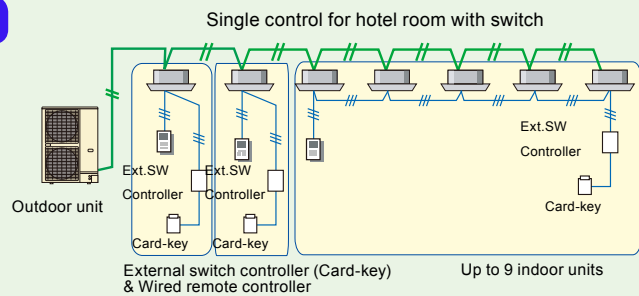
Up to 9 indoor units

Wireless Remote Controller

- Up to 9 indoor units can be controlled with one wireless remote controller.
- Wired, simple, and wireless remote controllers can be used jointly.

Single control for private room

Multiple control for meeting room etc.

Outdoor unit

Wireless & Wired remote controller

Up to 9 indoor units

External Switch Controller

- Up to 9 indoor units can be controlled with one external switch controller.
- In combination with a field supplied card-key switch or other sensor, External switch controller allows control of basic functions by the hotel or office guest.

Single control for hotel room with switch

Outdoor unit

Ext.SW Controller

Ext.SW Controller

Ext.SW Controller

Card-key

Card-key

Card-key

External switch controller (Card-key) & Wired remote controller

Up to 9 indoor units

### Single Split or Big Multi System Connectability

- Single spilit system or Big multi system can be connected to the VRF network system and can be controlled from Touch panel controller or System controller.

Combination with Single split or Big multi type

Outdoor unit

Network Convertor (UTY-VGGX)

Touch panel controller

Wired remote controller

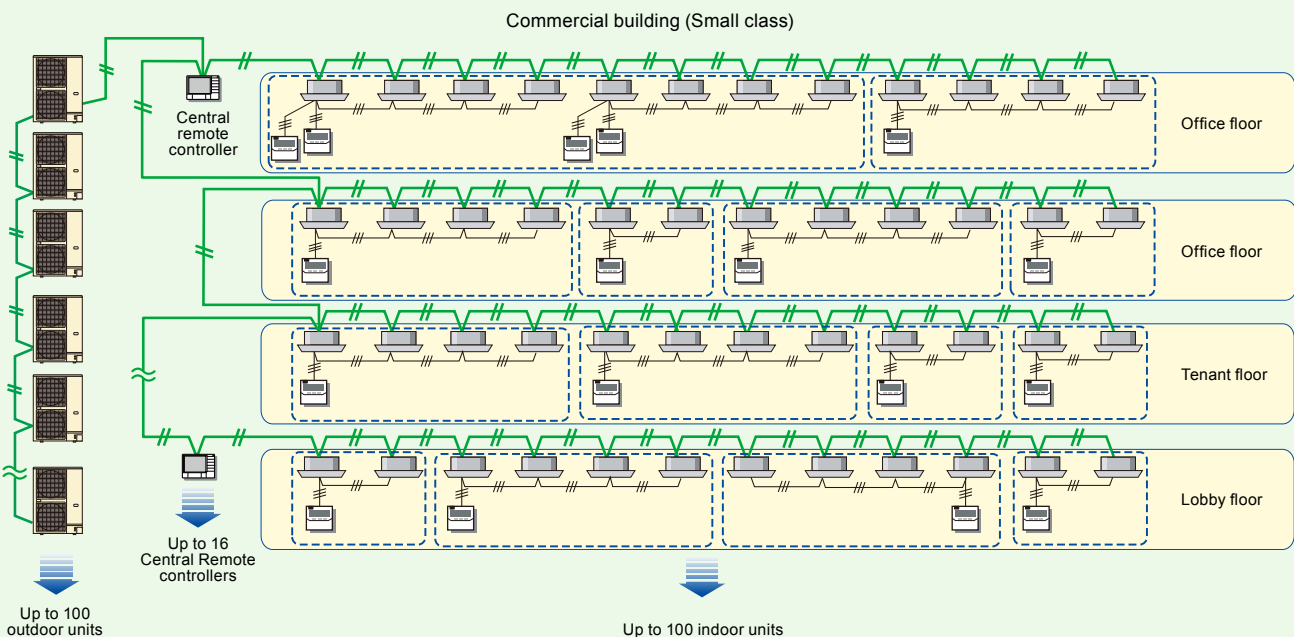Single split system or Big multi system
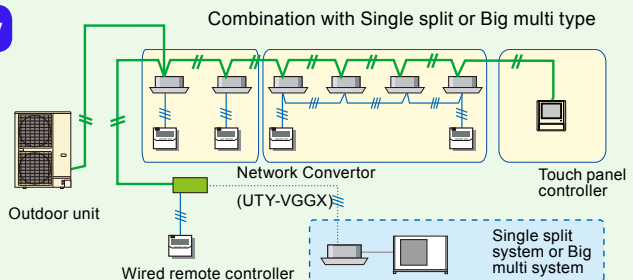
■ CENTRAL CONTROL

Group Remote Controller

- Up to 8 remote controller groups (18 indoor units) can be controlled with one group remote controller.
- Up to 4 Group remote controllers can be connected to a single network convertor (UTY-VGGX).
- One network convertor (UTY-VGGX) is allowed 2 refrigerant systems.
- Up to a total of 16 network convertors, central remote controllers and touch panel controllers can be connected to single VRF network system.

Office & Hotel building (Small class)

Office floor controlled by Group Remote Controller 1

Wireless remote controller

Office room

Wired remote controller

Meeting room

Network convertor

Outdoor units

1   2

Group remote controller

Hotel floor controlled by Group Remote Controller 2

Guest room

Simple remote controller

Lobby

Wired remote controller

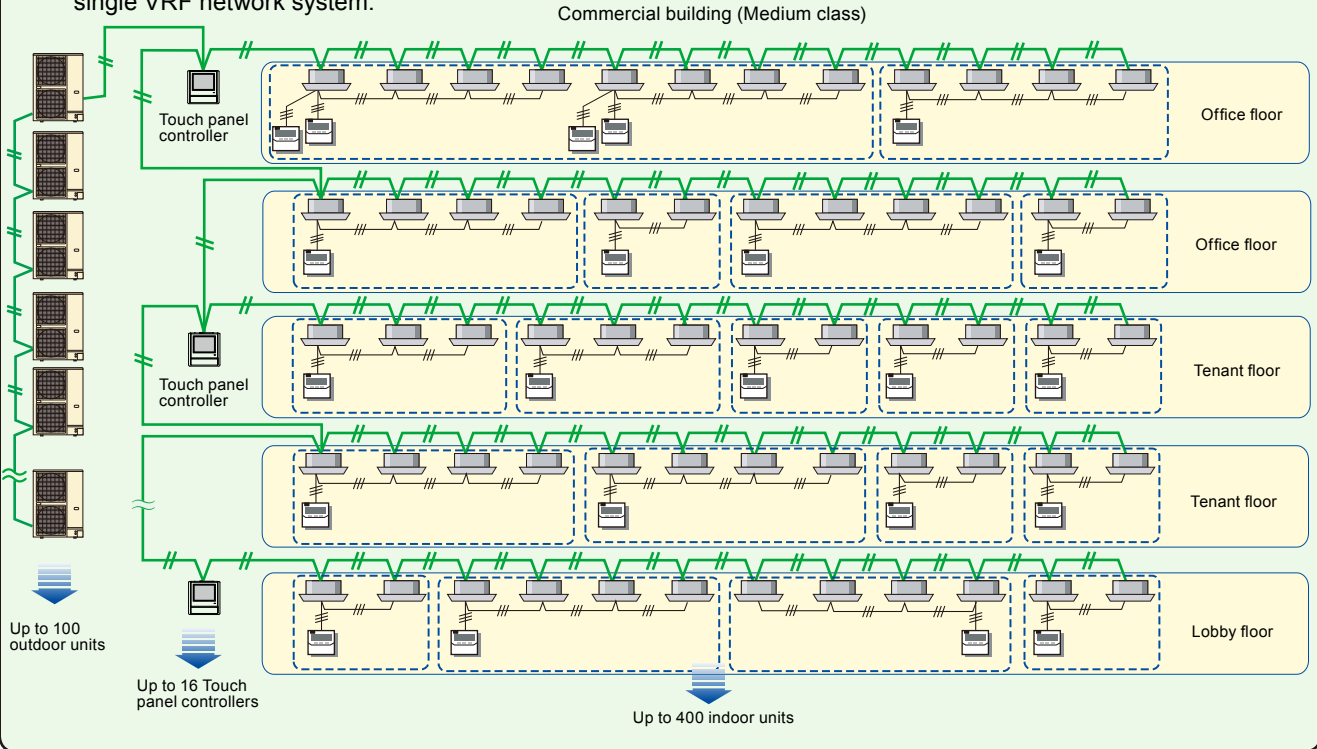Up to 8 remote controller groups (18 indoor units)
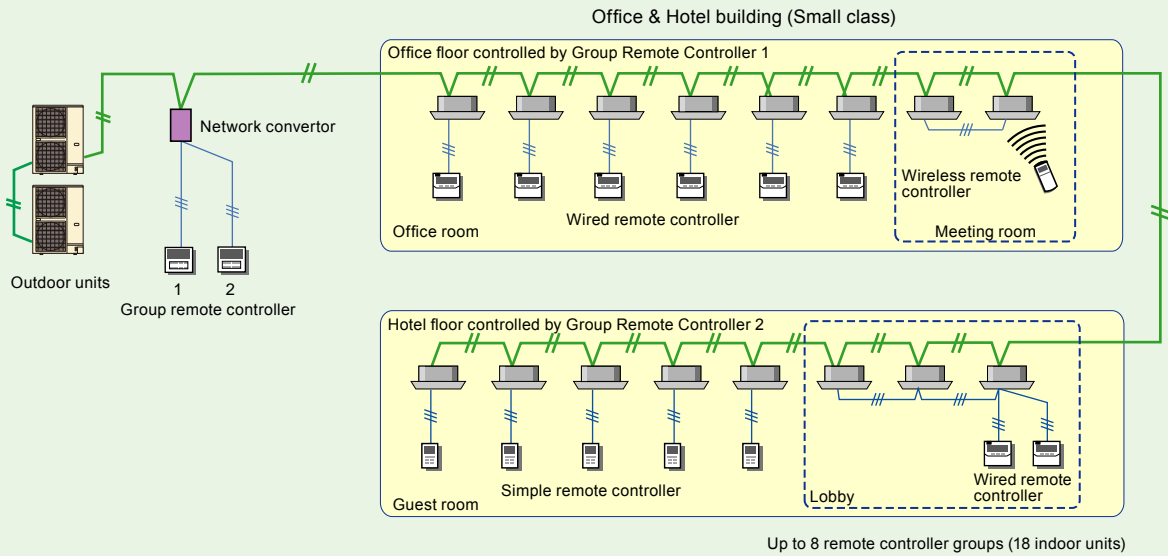
Central Remote Controller

- Up to 100 indoor units / 16 groups can be controlled with one central remote controller.
- Up to a total of 16 network convertors, central remote controllers and touch panel controllers can be connected to single VRF network system.

Commercial building (Small class)

Central remote controller

Office floor

Office floor

Tenant floor

Up to 16 Central Remote controllers

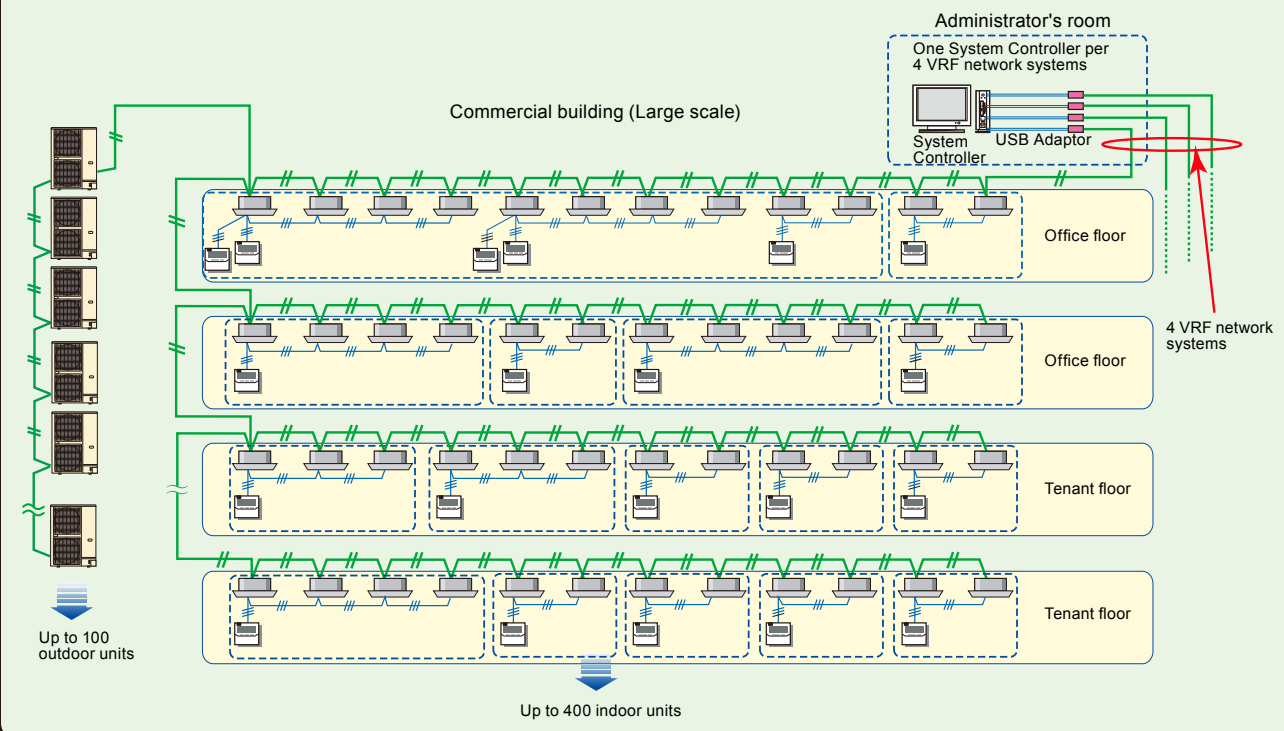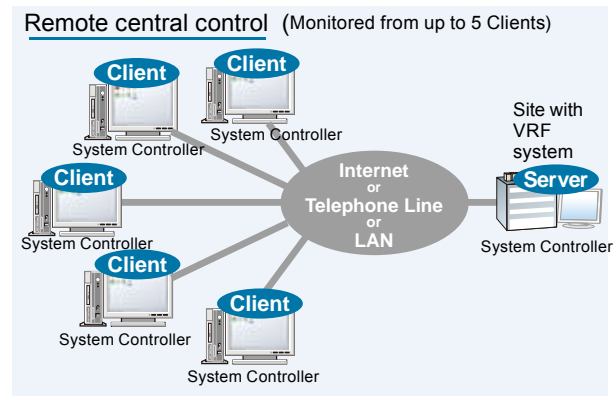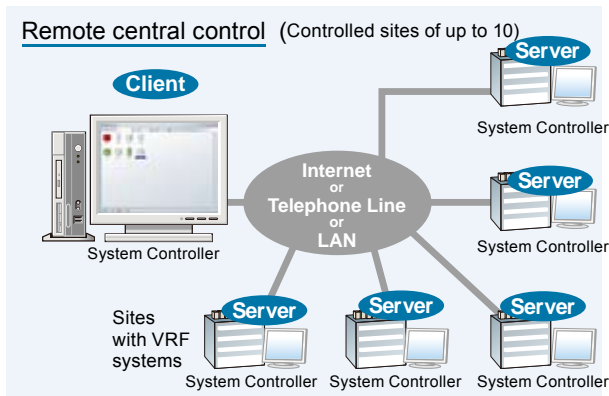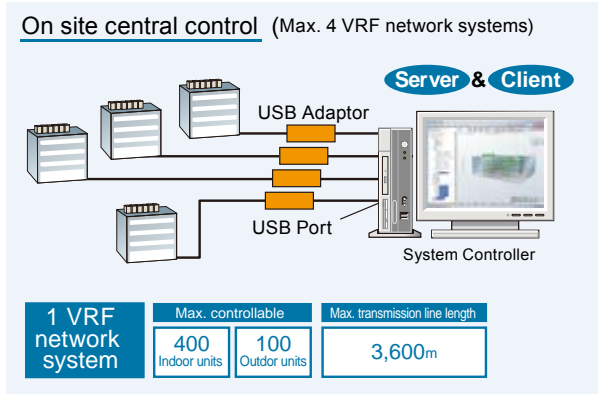Lobby floor

Up to 100 outdoor units

Up to 100 indoor units

Touch Panel Controller

- Up to 400 indoor units / 400 groups can be controlled with one touch panel controller.
- Up to a total of 16 network convertors, central remote controllers and touch panel controllers can be connected to single VRF network system.

Commercial building (Medium class)

Touch panel controller

Office floor

Office floor

Touch panel controller

Tenant floor

Tenant floor

Lobby floor

Up to 100 outdoor units

Up to 16 Touch panel controllers

Up to 400 indoor units

System Controller

- UP to 1600 (400 x 4 VRF network system) indoor units / 1600 groups can be controlled with one System Controller.
- Incorporates a function that automatically calculates electrical charge.

Administrator's room

One System Controller per 4 VRF network systems

Commercial building (Large scale)

System Controller

USB Adaptor

4 VRF network systems

Office floor

Office floor

Tenant floor

Tenant floor

Up to 100 outdoor units

Up to 400 indoor units

System Controller can be perfored as on site central control and remote central control.

On site central control (Max. 4 VRF network systems)

Server & Client

USB Adaptor

USB Port

System Controller

1 VRF network system	Max. controllable		Max. transmission line length
	400 Indoor units	100 Outdor units	3,600m

Remote central control (Controlled sites of up to 10)

Client

System Controller

Internet or Telephone Line or LAN

Server
System Controller

Server
System Controller

Sites with VRF systems

Server
System Controller

Server
System Controller

Server
System Controller

Remote central control (Monitored from up to 5 Clients)

Client
System Controller

Client
System Controller

Client
System Controller

Internet or Telephone Line or LAN

Site with VRF system

Server
System Controller

Client
System Controller

Client
System Controller

■ INDOOR UNIT TYPE AND THE APPLICABLE CONTROL METHOD

	Wired Remote Controller	Simple Remote Controller	Wireless Remote Controller	External Switch Controller
	UTY-RNK∗	UTY-RSK∗ UTY-RHK∗	UTY-LNH∗	UTY-TEKX
Compact Cassette	○	○	○	○
Cassette	○	○	△ *1	○
Compact Duct	○	○	△ *2	○
Slim Duct	○	○	△ *3	○
Low Static Pressure Duct	○	○	△ *2	○
Duct	○	○	△ *2	○
High Static Pressure Duct	○	○	△ *2	○
Floor / Ceiling	○	○	○	○
Ceiling	○	○	○	○
Compact Wall Mounted (EEV internal)	○	○	○	○
Compact Wall Mounted (EEV external)	○	○	○	○
Wall Mounted	○	○	○	○

*1 : IR Receiver Unit (Optional parts : UTY-LRH∗B1) is necessary.

*2 : IR Receiver Unit (Optional parts : UTB-∗WB or UTB-∗WC) is necessary.

*3 : IR Receiver Unit (Optional parts : UTB-∗WC) is necessary.

■ CONVERTORS (ADAPTORS) AND THE RELATED EQUIPMENTS (SYSTEM)

		Within VRF network system							VRF network system ↔ Other System	
		System Controller	Touch Panel Controller	Central Remote Controller	Group Remote Controller	Web Monitoring Tool	Service Tool	BACnet® Gateway	Single Split System / Big multi System	BMS/BAS
		UTY-APGX	UTY-DTG∗	UTY-DCG∗	UTY-CGG∗	UTY-AMGX	UTY-ASGX	UTY-ABGX		
Network Convertor	UTY-VGGX	-	-	-	○	-	-	-	○	-
USB adaptor *3	Field supplied	○	-	-	-	○	○	○	-	-
Network Convertor for LONWORKS®	UTY-VLGX	-	-	-	-	-	-	-	-	○
BACnet® Gateway	UTY-ABGX	-	-	-	-	-	-	-	-	○

*3 : U10 USB Network Interface TP/FT-10 is a product of Echelon® Corporation.

1-4. FEATURES OF CONTROL SYSTEM

■ SIMPLE WIRING SYSTEM

- 1 transmission line can interlink all equipments regardless refrigerant circuit.
- Non polar 2-conductor transmission cable.
- Central control equipment can be connected to anywhere on transmission line, no need to bring from outdoor unit.
  - -Making up the network system easily.
  - -Saving the total wiring length.
  - -Preventing the incorrect connection.
  - -Saving the installation time.

■ ADOPTION TO LARGE SCALE BUILDING

- 1 VRF network system allows to large scale application as follows.
  - -Total transmission wiring length can be extended up to 3,600m. (with signal amplifier unit.)
  - -Indoor units can be connected up to 400.
  - -Outdoor units can be connected up to 100.
  - -Touch Panel Controller can be covered to control whole equipment centrally.
  - -With using multiple Touch Panel Controllers, enable to control by individual zone or floor for convenient usage for various building application.
  - -By adopting interface for Single split type models (excluding some models), J series or multi air conditioner for building models such as Big multi made by FUJITSU GENERAL. (Refer to 3-1. NETWORK CONVERTOR)
- System Controller allows to control up to 4 VRF network systems (Max.1600 indoor units), suitable for huge scale application.

■ RELIABILITY AND EASY MAINTENANCE

- Stand-alone transmission NETWORK, allow to each equipment operates individually, thus failure of the units does not affect to other indoor units operation.
- When a failure occurs, the error code is displayed on the individual controller and central controller. (except Wireless Remote Controller)
- Also error histories can memory by each individual controller and central controller. (except Wireless Remote Controller)
- System Controller and Web Monitoring Tool allow to monitor operation status in real time via INTERNET, enable diagnoses quickly.
- Maintenance work is improved efficiency, because Service Tool can be connected to anywhere on the transmission line.

1-5. WIRING SYSTEM

● Wiring configulation of the control system is made of power source wiring, transmission wiring and remote controller wiring.
● Total wiring length (total length of transmission line) can be extended up to 3,600m (by using signal amplifiers).

Max. Transmission line length
3,600 m

System Controller UTY-APGX
· Maximum 1,600 indoor units can be controlled.
· Air conditioning control
· Operation monitoring
· Status monitoring system
· Electricity charge calculation

USB Adaptor
NW1
NW2
NW3
NW4

Internet or Public Telephone Line

(Remote / Monitoring side)

Touch Panel Controller
One Touch panel controller can control up to 400 groups / 400 indoor units.

Central Remote Controller
Maximum 100 indoor units can be controlled

Network Convertor UTY-VGGX

Group Remote Controller
Maximum 8 remote controller groups can be controlled

BACnet®

BACnet® Gateway UTY-ABGX

USB Adaptor

BACnet®

BACnet® Operator Workstation (B-OWS)

Network Convertor UTY-VLGX

LONWORKS® Network

IR Receiver Kit
Cassette type indoor unit can be controlled with wireless remote controller

Remote Controller Line
Maximum 9 units can be controlled

System without Remote Controller
Together with Touch panel controller, it is possible to build non remote controller system.

IR Receiver Unit
Duct type indoor unit can be controlled with wireless remote controller.

Card key

2 Remote Controllers
Indoor unit can be controlled from both remote controllers.

External Switch Controller
Indoor units can be controlled by combining with Card-key switch such as hotel room.

Transmission Line
line is non-polar 2-conductor.

Signal Amplifier UTY-VSGX

Network Convertor UTY-VGGX

Network Convertor UTY-VGGX

USB Adaptor

Web Monitoring Tool
Trouble free operation at all times by remote monitoring system.

Web Monitoring Tool UTY-AMGX

(VRF network system side)

Service Tool UTY-ASGX

Big multi system

Single system

(Monitoring side)

Internet or Public Telephone Line

Service Tool
Extensive monitoring and analysis functions for installation and maintenance.

(Monitoring side)

(Monitoring side)

USB Adaptor

				Transmission Line
Outdoor unit	Touch Panel Controller	Simple Remote Controller	IR Receiver Unit	Remote Controller Line
Indoor unit (Cassette)	Central Remote Controller	Simple Remote Controller		USB Cable
				LONWORKS® Network
Indoor unit (Duct)	Group Remote Controller	Wireless Remote Controller		Ethernet
				Signal Line (single system)
System Controller	Wired Remote Controller	External Switch Controller		Group Remote Controller Line

Combination of individual remote controller

Wired, simple and wireless remote controllers can be used jointly.

1-6. CONTROL EQUIPMENT DESIGN LIMITATION

			Model	Necessary equipment	The number that can be connected	The number of management [Indoor units]	Connectable outdoor unit
Controller	Central Controller	System Controller	UTY-APGX	USB Adaptor	1 / system	1600 (x 4 VRF Network)	400 (x 4 VRF Network)
		Group Remote Controller	UTY-CGG✳	UTY-VGGX	4 / UTY-VGGX	18 *4	2 *4
		Touch Panel Controller	UTY-DTG✳	—	16 / system	400	100
		Central Remote Controller	UTY-DCG✳	—		100	
Adaptor / Convertor		Network Convertor	UTY-VGGX	—	100 / system *1	—	—
		Network Convertor for LONWORKS® *3	UTY-VLGX	—	1 / system	128 *2	100
		BACnet® Gateway	UTY-ABGX	USB Adaptor	1 / system	1600 (x 4 VRF Network)	400 (x 4 VRF Network)
		Signal Amplifier	UTY-VSGX	—	8 / system	—	—
Service and Maintenance		Service Tool	UTY-ASGX	USB Adaptor	1 / system	400	100
		Web Monitoring Tool	UTY-AMGX	USB Adaptor		1600 (x 4 VRF Network)	400 (x 4 VRF Network)

*1: Maximum 100 Refrigerant system.

*2: Maximum connectable indoor unit number per one Network Convertor.
    (Please check the System Diagram (Item:3-2) for proper configuration)

*3: A maximum of 4 Network Convertors for LONWORKS® can be connected to 1 BMS.

*4: In the case of connection constitution for only J-II.

			Model	The number that can be connected
Controller	Individual Controller	Wireless Remote Controller	UTY-LNH✳	
		Wired Remote Controller	UTY-RNK✳	2 / Remote control group
		Simple Remote Controller (with operation mode)	UTY-RSK✳	
		Simple Remote Controller (without operation mode)	UTY-RHK✳	
Adaptor / Convertor		External Switch Controller	UTY-TEKX	
		IR Receiver unit		1 / Indoor unit

2. CONTROL UNITS

The following types of controllers are available with the FUJITSU GENERAL LIMITED VRF System :

- ● **System Controller**
- ● **Touch Panel Controller**
- ● **Central Remote Controller**
- ● **Group Remote Controller**
- ● **Wired Remote Controller**
- ● **Simple Remote Controller**
  (With operation mode)
  (Without operation mode)
- ● **Wireless Remote Controller**
- ● **IR Receiver Unit**

Central Control

System Controller	Touch Panel Controller	Central Remote Controller	Group Remote Controller

Individual Control

Wired Remote Controller	Simple Remote Controller		Wireless Remote Controller	IR Receiver Unit
	(With operation mode)	(Without operation mode)		
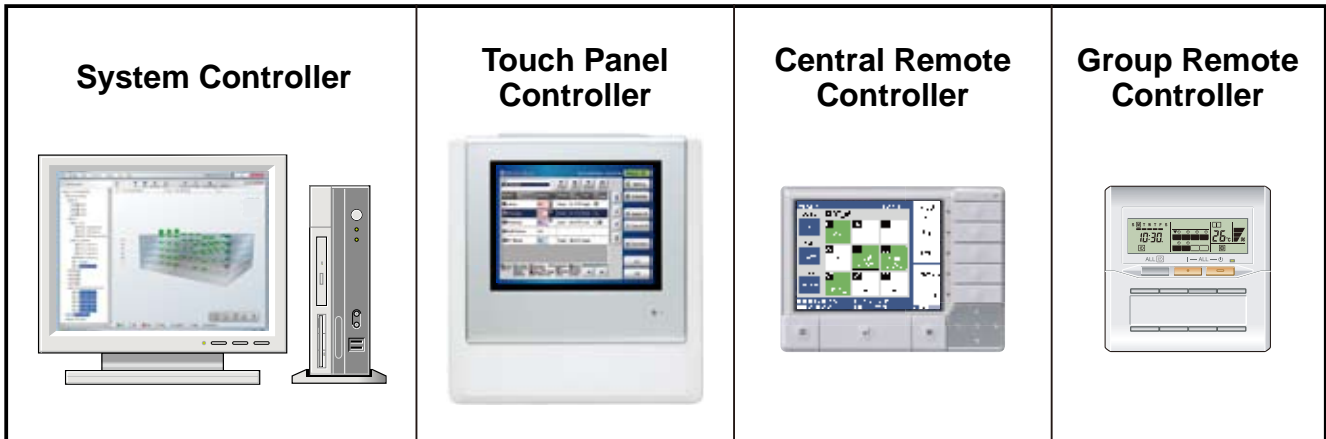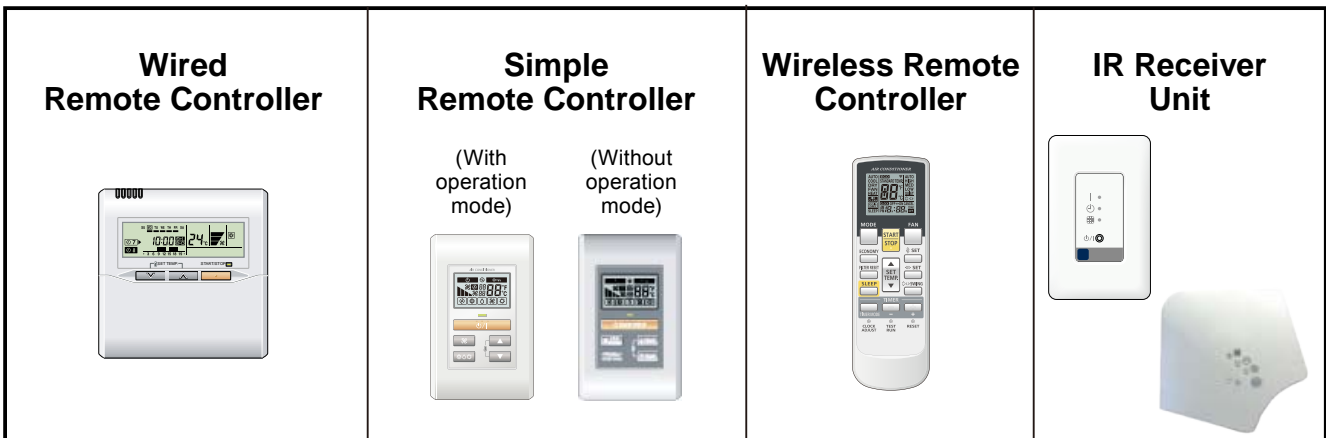
2-1. SYSTEM CONTROLLER (Software)

■ MODEL : UTY-APGX (Option: UTY-PEGX)

■ FEATURES

This system realizes the advanced general monitoring & control of VRF system from small scale buildings to large scale buildings.
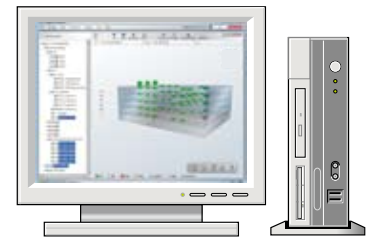
- Up to a maximum of 4 network systems, 1600 indoor units can be controlled.
- Supports VRF V-II Series, J-II Series, V Series & S Series. *1
- In addition to air conditioning precision control function, central remote control, electricity charge calculation, schedule management, and energy saving functions are strengthened and building manager and owner needs are met.
- Corresponds to 7 different language namely, English, Chinese, French, German, Spanish, Russian, Polish.
- Connection between VRF network system to personal computer is possible via small U10 USB interface. However, both U10 USB interface & personal computer are field supplied items.
- Extended feature*2 supported by use of options.

*1: Different VRF series may be connected for each of the 4 VRF networks supported by the System Controller, but different series may not coexist within the same network.
(V-II Series and J-II Series can exist together on same network. V Series and S Series can exist together on same network, too.)

*2: Electricity charge apportionment using electricity meter, energy saving control. (Only V-II & J-II Series)

● User friendly view and operation

- Provides graphical view of units layout as site , building and floor layout just as they are located in the actual sites.
- Unit status can be monitored at a glance, selecting the appropriate view that just fit your purpose.
- Control can also be performed from various views as individual unit or as a whole site, building or a whole floor.
- User defined groups, that are neatly arrange as tree view, easy to find, monitor and operate.
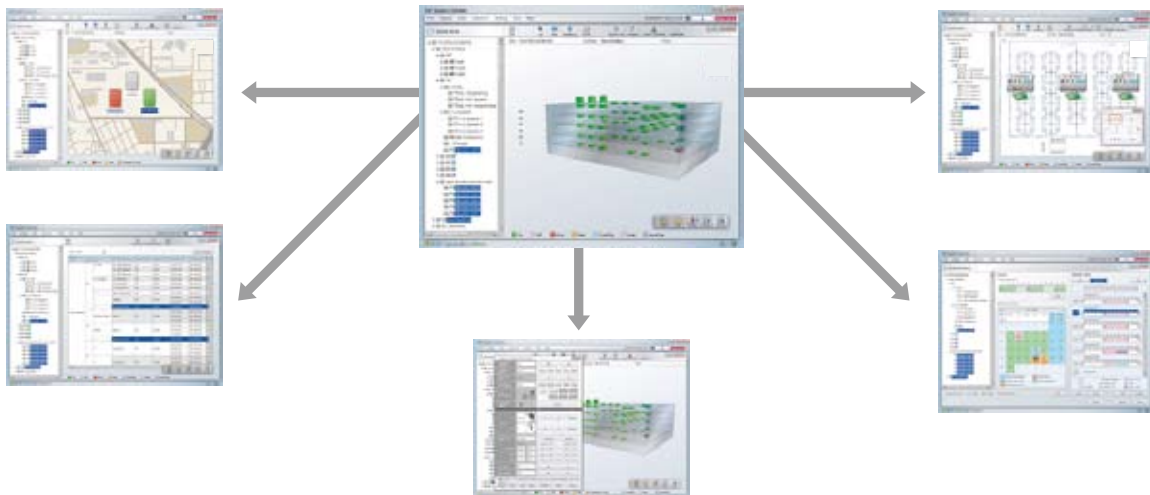
● Electricity charge apportionment

(Case1: Electricity meter is not connected)

● Total electricity charge, billed for multiple indoor units connected to the charge meter for air conditioning, is apportioned according to the accumulated operation time and indoor unit operating conditions.
● Allows accounting for special rates (e.g., for night or weekend use).
● Calculations can be printed as final bills.
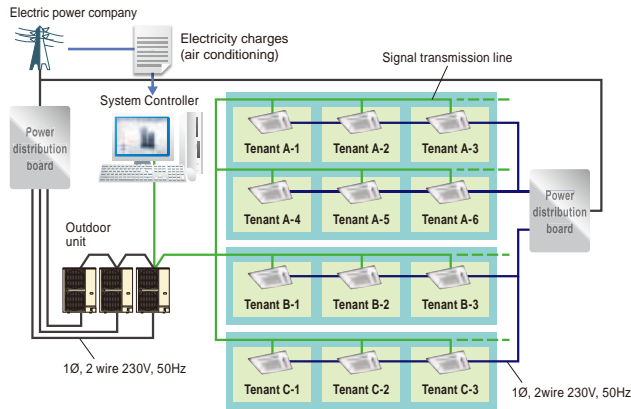
(Case2: Electricity meter is connected *1)

● Connecting a electricity meter allows the charges to be calculated for a variety of usage patterns such as charges for the power used on a per day basis.

*1: UTY-PEGX option is necessary.
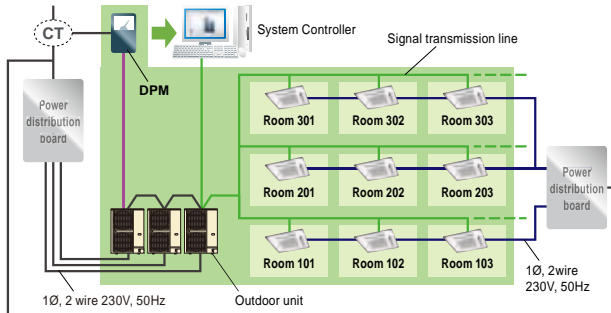
Note
● Multiple electricity meters can be installed taking into consideration the building design, etc. For example: ▪Install separate electricity meters for the outdoor units and indoor units ▪Install a electricity meter for the indoor units for each tenant ▪Install a electricity meter for the outdoor units/indoor units of each floor ▪Electricity meters that can output a pulse for 1 kWh (1 kWh/pulse) for the power consumed by the air conditioning are recommended. ▪There may be some restrictions on electricity meter installation depending on the property conditions. ▪The electricity charge apportionment calculation does not comply with the laws and regulations of the various countries regarding measurement act.

● Remote management

● 10 VRF network system can be controlled or monitored from 1 remote site.

VRF Network Systems in a maximum of 10 locations can be controlled and monitored from a single remote site. This is optimum for operation of a large company or large shopping mall with multiple facilities on a single site.
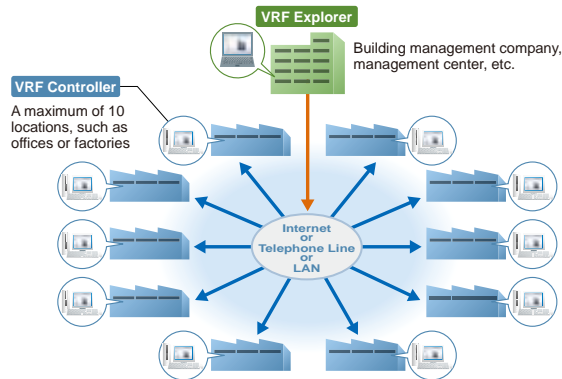
● 1 VRF network system can be monitored from any number of remote sites (Up to 5 simultaneous connections).

The building management company, security company, management center, etc., can use a single VRF system to remotely control, manage, and monitor simultaneously from up to 5 remote sites. This makes it possible to operate the system with high reliability.
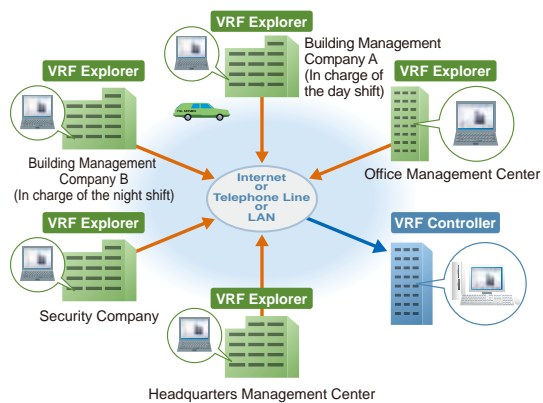
● **Energy saving management *1**

A variety of energy saving operations can be set and managed depending on the season, weather, and time period.
Excellent energy saving operation is performed while keeping users comfortable.

*1: UTY-PEGX option is necessary.

Energy saving graph data: This graph compares the electricity consumption with the previous month and previous year to make it easy to analyze the energy saving effect.

Energy Saving Management Main Screen

● **Peak cut operation**

A power meter is connected to detect the total power consumption while shifting the indoor unit set temperature, set the indoor unit forced thermostat off, and taking other measures to carefully control the power consumed while maintaining comfort and conducting control to maintain the target power consumption set for each time. The indoor units to be controlled can be freely grouped and the control level can be set.

Forced thermostat off range
Outdoor unit stop range
Target power consumption
Shows change in power consumption by time
Ideal control line (Use of average power consumption)
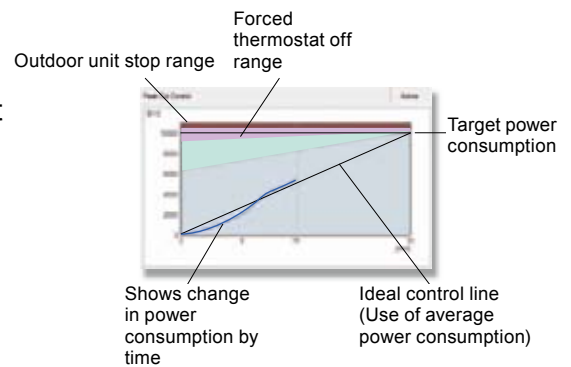
● **Outdoor unit capacity save**

Outdoor unit capacity save switches the outdoor unit capability upper limit to suppress power consumption during hot summers and cold winters by averaging the power saving effect of each refrigerant system. You can select from 50% or more of the capacity upper limit.

Hot day of summer

Cold day of winter
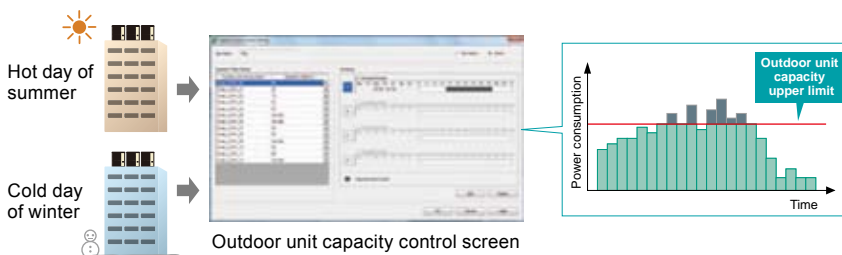
Outdoor unit capacity control screen

Power consumption

Outdoor unit capacity upper limit

Time

● **Indoor unit rotation operation**

The operation of indoor units can be automatically rotated within a group in accordance with the set annual schedule to reduce power consumption while maintaining comfort. The indoor unit operation stoppage rate can be selected from 10% to 30%.
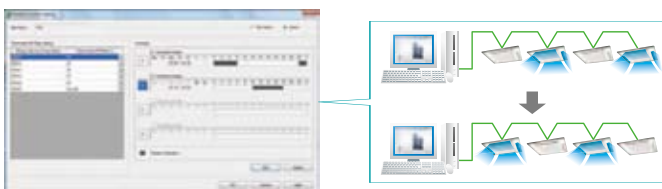
Indoor unit rotation screen

●Versatile operation support

●Schedule control

- Annual schedules can be set for each remote controller group / user defined group.
- Start / stop, operation mode, remote controller prohibition, and temperature settings can be recorded up to 143 times per day at 10 minute intervals for up to 101 configurations for each remote controller group.
- Settings can be made for periods straddling midnight.
- Allows programming of special settings for holidays, including public holidays, for a complete year.
- Low noise operation of outdoor unit can be scheduled.

●Error display

Error is notified with popup message,audible sound and e-mail real time when error occurs.Error for the past 1 year are logged and can be reviewed later.

●Operating & control record

Displays the history of operation status and indications.

●Diverse control of indoor units

- Indoor unit operation state, operation mode, etc. are displayed
- Indoor unit start/stop and operation mode switching Temperature setting, remote controller prohibition, etc. setting.

●Energy saving function

Energy saving operation considering comfort by economy setting, temperature set point limitation, etc.

●Automatic clock adjustment

The time setting of each controller can be set in batch automatically.
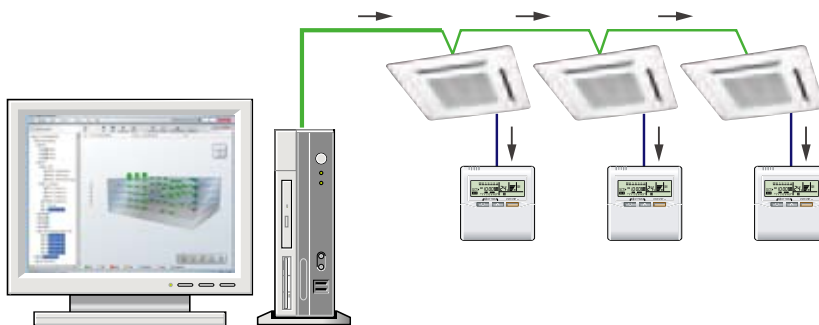
■ SYSTEM DIAGRAM

- System controller may be used on site or remotely over various networks for remote central control.
- System controller consists of VRF Controller software and VRF Explorer software, both softwares are working together.
- VRF Controller software runs in the background and communicate with VRF System.
- VRF Explorer software provides user interface and communicate with the VRF Controller.
- VRF Controller and VRF Explorer softwares may run in a single PC or in different PCs separated by network.
- VRF Explorer software does not require Wibu key.

Remote control / maintenance from multiple sites

Remote centralized control / maintenance center

VRF Explorer

Building Management Company A
(In charge of the day shift)

Remote control / maintenance to multiple buildings

VRF Explorer

Building Management Company B
(In charge of the night shift)

Internet or Telephone Line or LAN

VRF Building n

VRF Explorer

Security Company

VRF Building 3

On site control Max. 4 VRF network systems

VRF Controller
&
VRF Explorer

USB Adaptor

VRF Building 2

USB Port

System Controller

VRF Building 1

■ PACKING LIST

Name and shape	Quantity	Application
CD-ROM	1	Includes the software and manuals for System Controller. Both VRF Controller and VRF Explorer software are included.
Wibu Key (Software protection key)	1	Software protection key to be inserted in a USB slot running System Controller. System Controller may only run on a PC with Wibu Key. However, Wibu key is not required for remote VRF Explorer software.

■ SOFTWARE CONFIGURATION

VRF Controller
WIBU-Key
UTY-APGX

WIBU-Key unnecessary

VRF Explorer

WIBU-Key
UTY-PEGX
Option

Local Site
(VRF network system side)

Remote Site
(Monitoring center side)
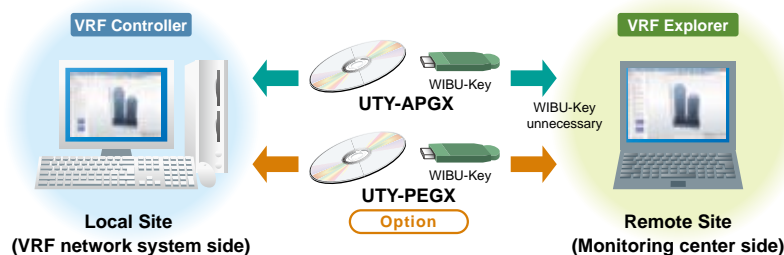
Any number can be installed in remote site personal computers.
System Controller UTY-APGX can be installed in the local site PCs (VRF Controller) connected to the VRF network system and the multiple remote site PCs (VRF Explorer) connected to those computers via the Internet or LAN. Just this single product creates the control, management, and monitoring environment for the customer's properties including remote operation.

*The WIBU-Key is not required for PCs on the remote site side. Some functions, such as equipment registration, and input/output, are not possible on the remote site side.

Optional software to strengthen the energy saving function
Installing the optional UTY-PEGX will strengthen the energy saving management function.

■ PERSONAL COMPUTER SPECIFICATIONS

Operating system	Microsoft® Windows® XP Professional (Service Pack 3 or later / English version)
	Microsoft® Windows Vista® Home Premium, Business (Service Pack 2 or later / Corresponds to 7 different languages.*)
	Microsoft® Windows® 7 Home Premium, Professional (Service Pack 1 or later / Corresponds to 7 different languages.*)
	*English, Chinese, French, German, Spanish, Russian, Polish
	•64-bit version of Windows® are not supported.
CPU	Intel® Pentium® / Celeron 2 GHz (VRF Controller), 1 GHz (VRF Explorer) or higher
HDD	40 GB or more of free space (5 GB for VRF Explorer PC)
Memory	2 GB or more (VRF Controller), 1 GB or more (VRF Explorer)
Display	1024 x 768 dots or more. 15 inch or higher size is preferable.
Interface	USB port is required for each of the followings for Server PC ; • Wibu Key (Software protection key) • Echelon® U10 USB Network Interface (Required for each VRF Network) Ethernet port is required for remote connection using internet.
Accelerator	Requires the internal graphics accelerator be compatible with Microsoft® DirectX® 9.0
Software required	Adobe® Reader® 9.0 or later
Hardware required	CD-ROM Drive

■ OPTION AVAILABLE

Energy Saving Software	UTY-PEGX *1	Additional support for energy saving function and Electricity Charge Apportionment using electricity meter.

■ U10 USB NETWORK INTERFACE SPECIFICATIONS

Product Name : Echelon® U10 USB Network Interface – TP / FT-10 Channel

Model Number: 75010R

■ SPECIFICATION SUMMARY

Type		Function	UTY-APGX	UTY-PEGX *1 Option	Remark
System specification		Max. System Controller per VRF Network	1	—	
		Max. VRF networks supported	4	—	Site with up to 4 VRF networks may be administered with 1 System Controller
		Max. indoor units / remote controller groups per VRF network	400	—	
		Max. indoor units / remote controller groups per System Controller	1,600	—	4 VRF networks
Site supervision		Multiple sites display	10	—	
		2D/3D graphical layout view	●	—	2D: Site, floor, 3D: Building Quick control from display available.
		List display	●	—	Quick control from display available.
		Tree display	●	—	Quick control from display available.
Operation control	Individual	Start/Stop, Operation mode, Room temperature	●	—	
		Fan speed, Air flow direction	●	—	
		Economy mode	●	—	
		Antifreeze	●	—	
		Remote control prohibition setting	●	—	
		Temperature upper and lower limit setting	●	—	
		Filter sign reset	●	—	
	Schedule	Annual schedule	●	—	Week of year, day of month, day of week setting. Holiday special day settings.
		Low noise mode weekly schedule	●	—	Outdoor unit control only.
	Group management	Number of groups	1,600	—	
		Group in group	3 Levels	—	Lv.1 – 2 – 3.
		Max. overlap definitions	1,600	—	1 unit may belong to up to 1,600 groups.
		Auto generation	●	—	By site, building and floor.
	Others	Memory operation	●	—	Operation pattern memorized and reused.
		Pattern operation	●	—	Reuse operation pattern once used.
Operation status monitoring		Controlled status	●	—	See items controlled by operation.
		Special operation	●	—	Defrost, Oil Recovery.
Error management		Error notification	●	—	
		Audible alarm	●	—	
		Error e-mail notification	●	—	
History management		Error history	1 year	—	
		Operation control & status history	1 year	—	
Energy saving management		Indoor unit rotation	—	●	
		Outdoor unit capacity save	—	●	
		Peak cut control	—	1 month	
		Power consumption monitor	—	●	
		Electricity meters supported	—	200	Outdoor unit required per connection
		Power consumption information	—	3 years	
Electricity charge apportionment		Apportionment charge calculation	●	—	
		Apportionment charge bill creation	●	—	
		Tenant (block) setting	1600	—	
		Common facilities apportionment setting	●	—	
		Rated power consumption allotment setting	●	—	
		Electricity meters supported	—	200	Same meters used for energy saving.
		Electricity charge apportionment period	2 years	—	
Remote control		Internet, telephone line support	●	—	
		Max. client connection per server	5	—	
		Max. host connection from client	10	—	
		Data encryption	●	—	SSL used.
Others		User control	●	—	Authorization level setting.
		Database import / export	●	—	
		Multiple language display	●	●	English, Chinese, French, German, Spanish, Russian, Polish.
		Floor layout editor	●	—	
		Floor layout import/export	●	—	

Note: The S, V, V-II and J-II Series are supported, but with the S and V series, there are some functions that cannot be used, such as energy saving function and electricity meter use.

*1:Energy saving software (UTY-PEGX) is available for the indoor units and the outdoor units with revision code B or later.

∗The electricity charge apportionment function of VRF system can only be performed from one equipment simultaneously.

CONTROL SYSTEM

2-2. TOUCH PANEL CONTROLLER

■ MODEL : UTY-DTG∗

- Large-sized 7.5-inch TFT color.
- LCD easy finger touch operation.
- Stylish shape and design to suit all application.
- No additional component is required for installation.
- Up to 400 indoor units can be controlled.
- Selectable 2 display types (Icon / List) in monitoring mode
- Corresponds to 7 different languages like, English, Chinese, French, German, Spanish, Russian, Polish.

■ FEATURES

● Easy operation

- Wide range of simple-to-understand icons.
- Operation can be selected using your finger or the dedicated touch pen by pressing the appropriate on-screen icon.
- Up-to-date status display.
- Background color identifies current control operation blue for monitoring, green for operational control.

● Function

Individual control

Flexible grouping

Schedule control

Indoor units operation monitoring

● Automatic clock adjustment

The time setting of each controller can be set in batch automatically.
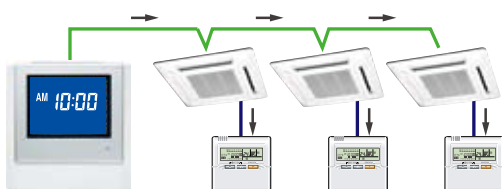
● Versatility

● Emergency stop function

Air conditioner can be turned off through the external input control.

● The stored data can be transferred via USB port.

● CSV format data* edited by PC can be imported to Touch Panel Controller.

Emergency stop function

CSV format data edited by PC can be imported to Touch Panel Controller.

Data transfer available by USB
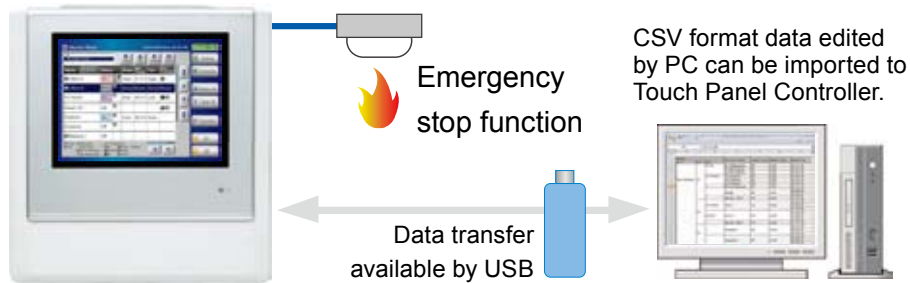
* File making sheet is included in CD-R.

● Easy installation

● Touch Panel Controller is easily mounted to the wall.

● Flat back surface allows to be installed wherever it is needed.

● No additional component is required for installation.

■ FUNCTIONS

No.		Item	Description
1	Installation	Language setting	Design considering multi-language correspondence. *1
		Indoor unit registration	Indoor unit registration. Max 400 units. (Set data can be written to and read from USB memory)
		Functions setting	Temperature set point limitation, external input, central operation on/off setting.
2	Monitor	Display switching	Icon display, list display
		Display units	ALL, group, individual (remote control group)
		Monitor contents (icon display)	Group name, operation, operation mode, set temperature, time, errors, timer setting, filter sign
		Monitor contents (list display)	Group name, operation, operation mode, set temperature, air flow, air direction, special operation, anti-freeze, time, errors, timer setting, filter sign
		Error list	Group name, remote control group name, address, error code
		Special state	Display during special operation
3	Control	Control units	ALL, group, individual (remote control group)
		Control contents	Operation, operation mode, set temperature, air flow, RC Prohibition, filter sign reset
		Detailed control contents	Air direction, energy saving, anti-freeze, test run
4	Setting	Date and time	Time display switching, year/month/day display switching, system clock setting, summer time
		Panel cleaning and correction	Select display area for panel cleaning. User can select black screen on display.
		Group	Stages: Max. 3 stages Settable up to 400 groups. (Set data can be written to and read from USB memory)
		Background light and beep sound	Backlighting off time and brightness setting, BEEP sound operation setting
		Password	Management level: 3 kinds
		Schedule timer	Max 30 items settable
		Temperature range	Celsius/Fahrenheit switching, cooling, heating, and AUTO each settable.
5	Maintenance	Error history	Recording of max 10 errors each for touch panel controller and each unit (indoor unit, outdoor unit)
		Status history	Recording of max 100 operations each for each indoor unit. Writable to USB memory.
		Operation history	Recording of max 100 operations. Writable to USB memory.
		Version display	Version display
6	Others	External input/output	Input: Batch operation/stop, emergency stop
			Output: Operation monitoring, error

*1 : Product specifications are subject to change without notice.

＊ To protect the compressor of the outdoor unit, please carefully read and understand the following cautions that may affect the operation of the compressor before executing the setting.

• When regularly making the following settings to the same outdoor unit by using schedule function etc., please leave the following interval.

<Corresponding function>

More than 6 minutes must elapse

· Release outdoor unit stop mode	→ ←	· Set outdoor unit stop mode

More than 3 minutes must elapse

• When performing periodical settings like schedule settings for the following functions, perform the setting to all the indoor units in the same refrigerant system simultaneously, conforming to the timing restriction described below.

<Corresponding function>

More than 10 minutes must elapse

· Start operation · Release indoor unit forced thermostat off mode	→ ←	· Stop operation · Set indoor unit forced thermostat off mode

More than 10 minutes must elapse
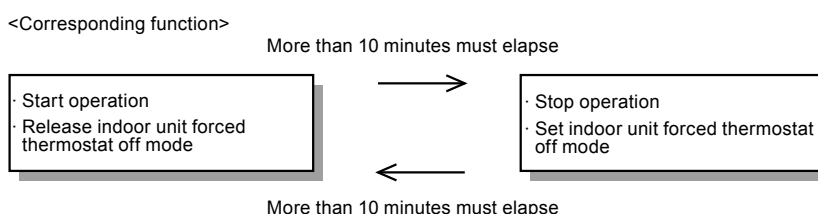
CONTROL SYSTEM

■ STATE TRANSITION DIAGRAM

Power ON

Finish Indoor unit registration

No

Yes

Installer setting
- Date and time setting
- Touch panel address setting
- Indoor unit registration
- Function settings of Touch Panel Controller

Monitor & control
- Monitor display
- Operation setting display

User setting
- System setting
  - Date and time
  - Group
  - Password
  - Schedule timer
- Environment setting
  - Panel positioning
  - Background light setting
  - Sound setting
  - Panel cleaning
- History
  - Error history
  - Status history
  - Operation history
  - Version display

**Signal send out
Signal receiving**

VRF network system

CONTROL SYSTEM

■ MAIN FUNCTIONS AND SCREEN EXAMPLES

● Monitor display example

An easy-to-use display mode can be selected.

Easy-to-understand GUI of adopted icon.

Icon display

List display example

● Operation setting example

Large button is designed for easy to access.

Operation setting display

Optional setting display
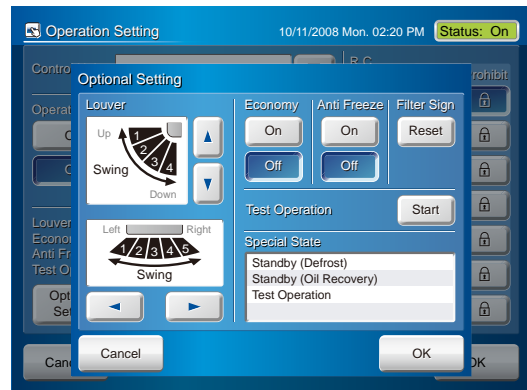
● Group setting

Groups can be arbitrarily set in easy to manage units as shown in the figure.

Control and monitoring are performed in these group units.
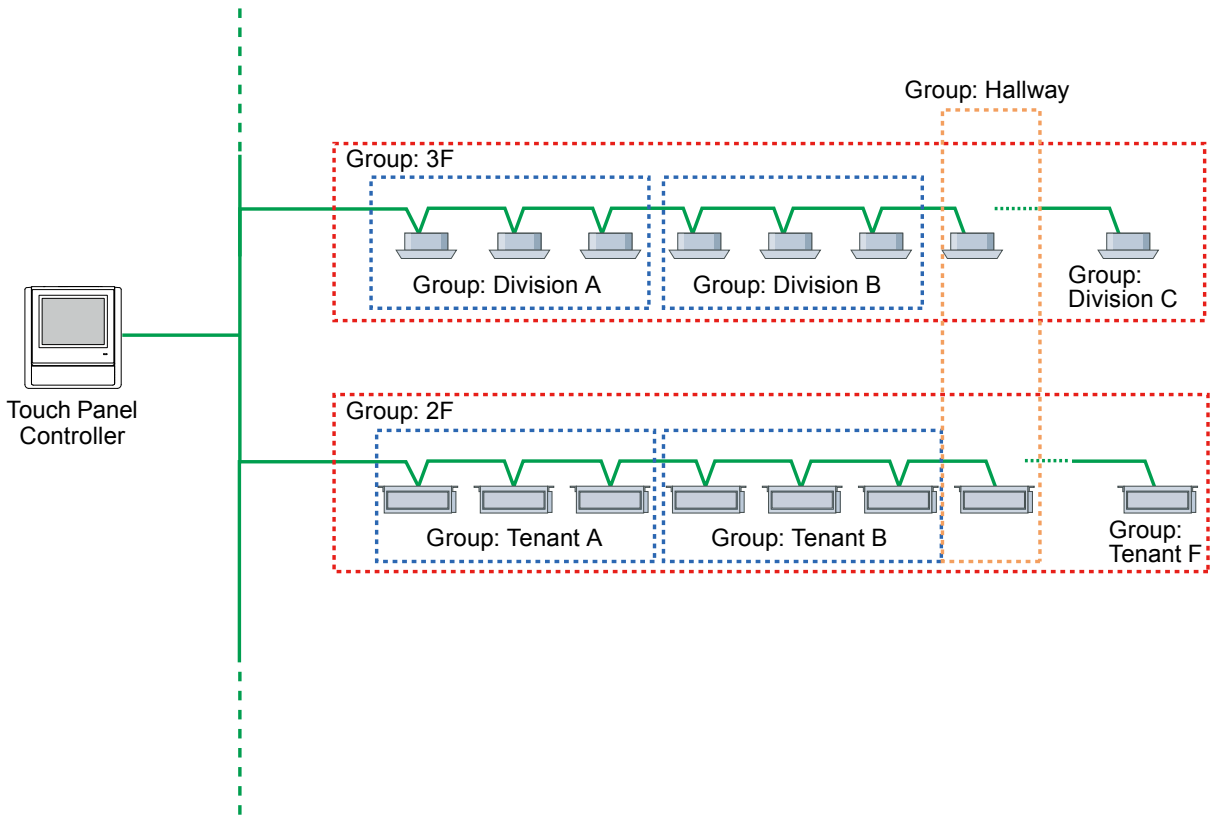
Group setting screen

● System schedule timer

Annual schedule can be set of a maximum 30 items.

Schedule setting screen

● History recording and display

Error, status and operation histories can be recorded. Each recording can be also written to USB memory.

- Error history: Max 10 items each recorded for touch panel controller and each unit (indoor unit, outdoor unit)
- Status history: Max 100 operations each recorded for indoor unit of each room
- Operation history: Operation of max 100 operations recorded

Optional history screen

■ INSTALLATION

● Installation space

When installing Touch Panel Controller in a row, keep the space shown below from the surrounding projecting parts.
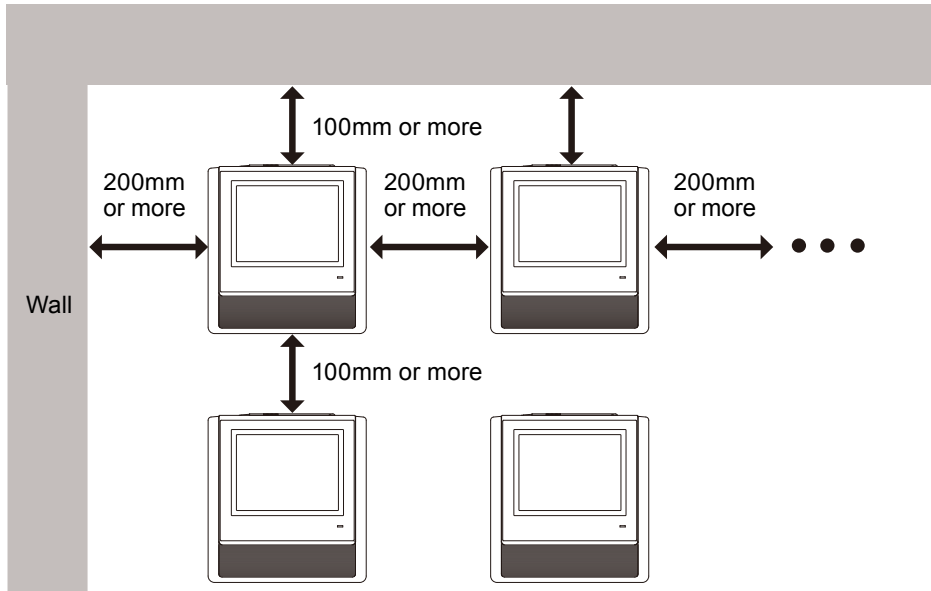
Note: The switchbox that Touch Panel Controller is to be mounted to should be installed horizontally in advance.

● Caution

Follow installation way is prohibited.

Horizontal way   upside-down   Horizontal way
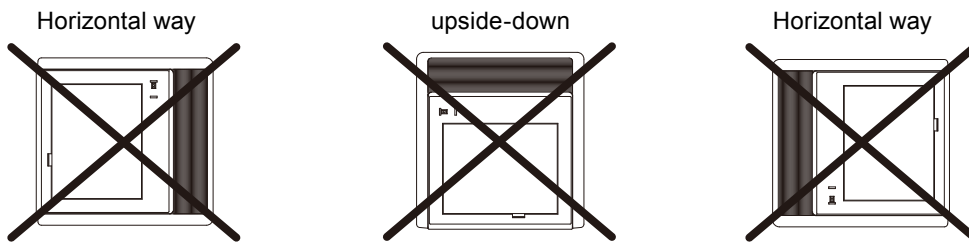
● Terminal names

Names of connection terminals inside rear cover.

Power supply cable through hole

Transmission cable connection terminals

Power supply cable connection terminals

Transmission cable through hole

POWER SUPPLY		
L	N	⏚
⊕	⊕	⊕

TRANSMISSION			EXTERNAL INPUT			
			CH1		CH2	
X1	X2	⏚	K1	K2	K1	K2
⊕	⊕	⊕	⊕	⊕	⊕	⊕

Power supply 1ø 100-240V	Ground	VRF LONWORKS® Transmission	Ground	External input Input type: Edge/pulse
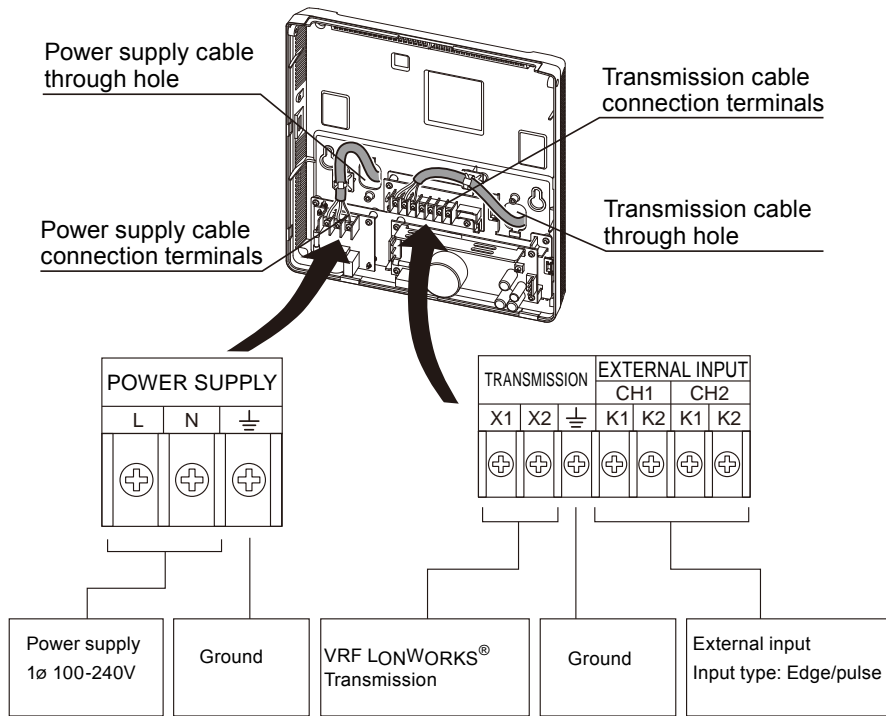
● External input terminals

External input terminals are prepared for all ON/OFF and Emergency stop commands.

POWER SUPPLY		
L	N	⏚
⊕	⊕	⊕

Power supply
AC 100-240V
50 / 60 Hz

Fuse
（5A）

TRANSMISSION			EXTERNAL INPUT			
			CH1		CH2	
X1	X2	⏚	K1	K2	K1	K2
⊕	⊕	⊕	⊕	⊕	⊕	⊕
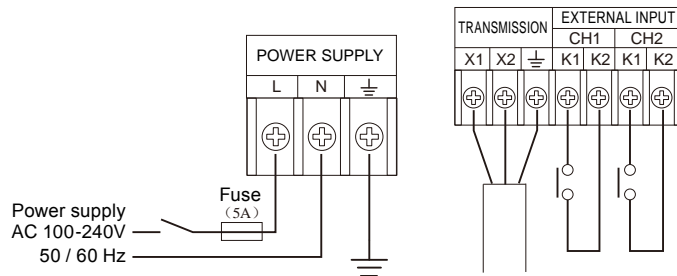
CONTROL
SYSTEM

● Installation method

Please refer to an installation manual for the details.

Power supply cable   Transmission cable

Switchbox

Wall hole

Installation plate

Power supply cable

Screw

Washer

Screw

Binder

Touch pen tray

Transmission cable

Binder

Harness

Connection cable
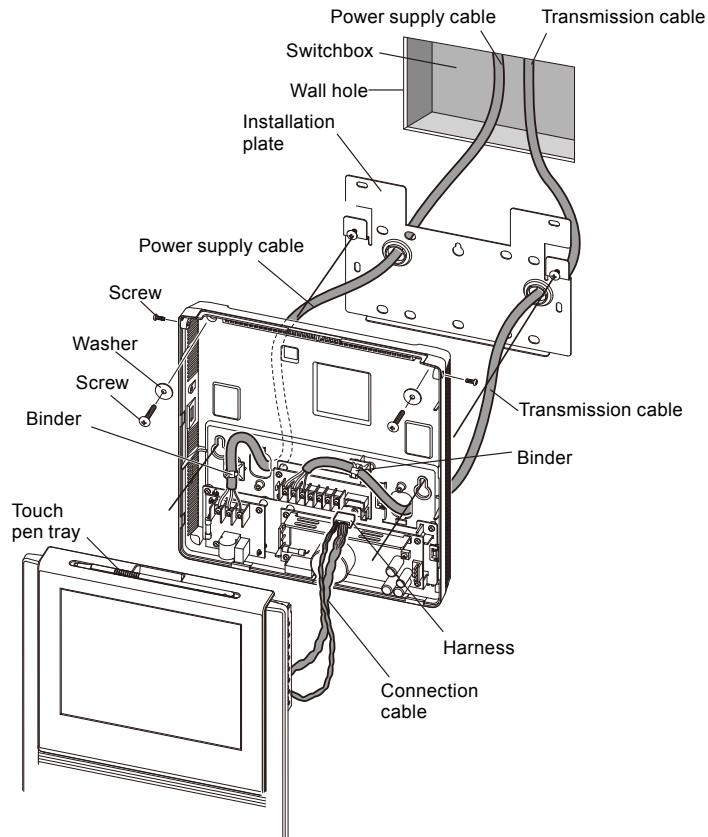
| CAUTION: In advance install a switchbox to the wall where the touch panel controller is to be installed. |

● The diagram of the mounting plate screw hole positions

(Unit : mm)

211
190
180

57
R2.5
51
7
53
95
145
147

12.4

R5
R2.5
10

62.6

R4   R4   R2.5

2-Ø23.7

12

10
90
142
56.7   74.2
189
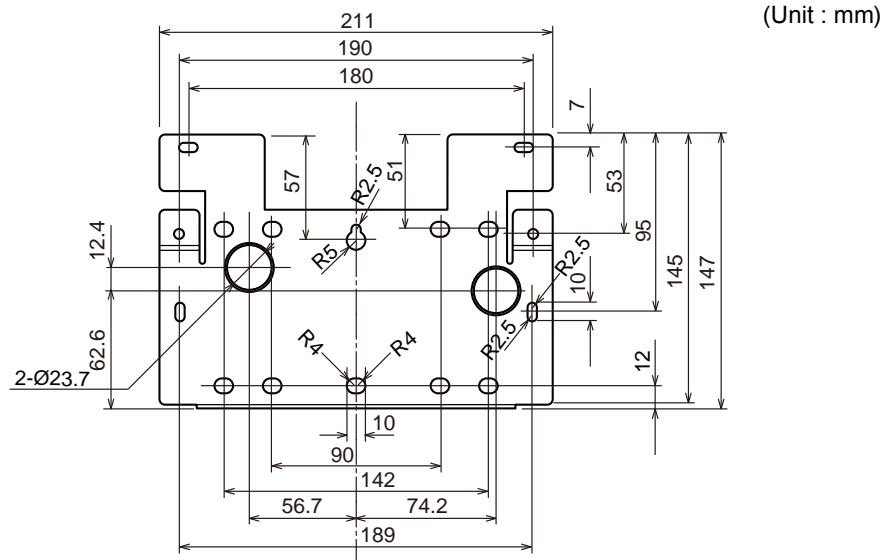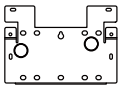
| CAUTION: Refer to the mounting screw hole positions of the switchbox that is to be installed in advance and check the compatibility. |

■ DIMENSIONS

(Unit : mm)

Top view

Touch pen

246

93

26

Touch panel

USB port

Side view

260

Front view

54

Side view

198

66

167

179

2−ø17

Installation plate

Rear view
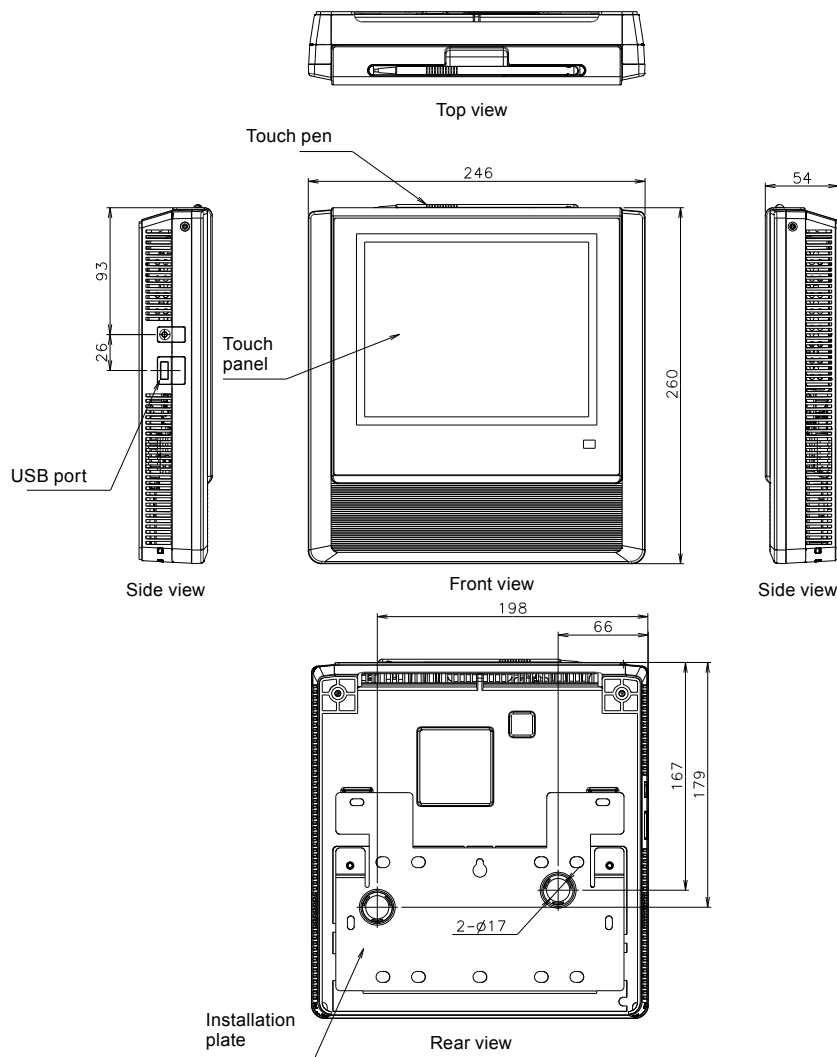
■ PACKING LIST

Name and shape	Quantity	Application
Installation plate	1	For Touch Panel Controller installation (It is attached to the back of the Touch Panel Controller)
Screw	8	Screw for Touch Panel Controller installation (M4 x 20mm)
Washer	8	Washer for Touch Panel Controller installation
Touch pen	1	Pen for Touch Panel Controller operation
Binder	4	Prevents dropping off of the cable
CD-R	1	Include the operating manual and file making sheet of this controller
Installation manual	1	
Operation manual	1	

CONTROL SYSTEM

■ WIRING SPECIFICATIONS

Use	Size		Wire type	Remarks
Power supply cable	Maximum	1.25mm^2	245 IEC 57 or equivalent	1 ø AC100 - 240 V 50/60Hz, 2 Wire + ground (Always ground the unit)
	Minimum	0.5mm^2		
Transmission cable	0.33mm^2 (22AWG)		LEVEL4 (NEMA) non-polar 2 core, twisted pair solid core Shielded	LONWORKS compatible cable
External input / output cable	0.33mm^2 (22AWG)		Polar 2core, Twisted pair	Use shielded cable in accordance with the regional cable standard.
Fuse capacity	5A			

■ SPECIFICATIONS

Model name	UTY-DTG✱
Power source voltage (V)	1 ø AC 100 - 240
Power source frequency (Hz)	50 / 60
Input Power (W)	22
Display	7.5-inch TFT color LCD display (640 x 480 pixels), with Touch panel
LED indicator	Power LED (Green)
External interface	USB 2.0
	Transmission line
	EXT IN: (Either emergency stop or batch operation/stop) (Either Dry contact or Apply voltage can be selected)
	EXT OUT: (Operation state, error state)
	Reset SW
Usage temperature range (°C)	0 to 40
Usage humidity range (%)	0 to 85 (no condensation)
Storage temperature range (°C)	-20 to 70
Storage humidity range (%)	0 to 85 (no condensation)
Dimensions [H x W x D] (mm)	260 x 246 x 54
Weight (g)	2150

CONTROL SYSTEM

CONTROL SYSTEM

2-3. CENTRAL REMOTE CONTROLLER

■ MODEL : UTY-DCG✳
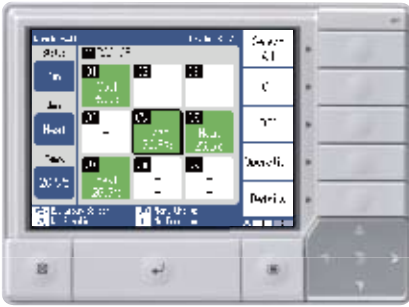
- Individual control and monitor of 100 indoor units.
- 5 inch TFT color screen.
- User friendly view and easy operation.
- External input / output contact.
- Detachable power supply unit.
- Corresponds to 7 different languages (English, Chinese, French, German, Spanish, Russian, Polish)

■ FEATURES

● User friendly operation

- Operation status monitor displays for all indoor units. (Max. 100 units)
- Easy comprehensible display and operation button.

Function Menu
Function menu displays the items to select.

Registration indoor unit

Operation guidance

Function button
1 to 1 function botton supports easy setting.
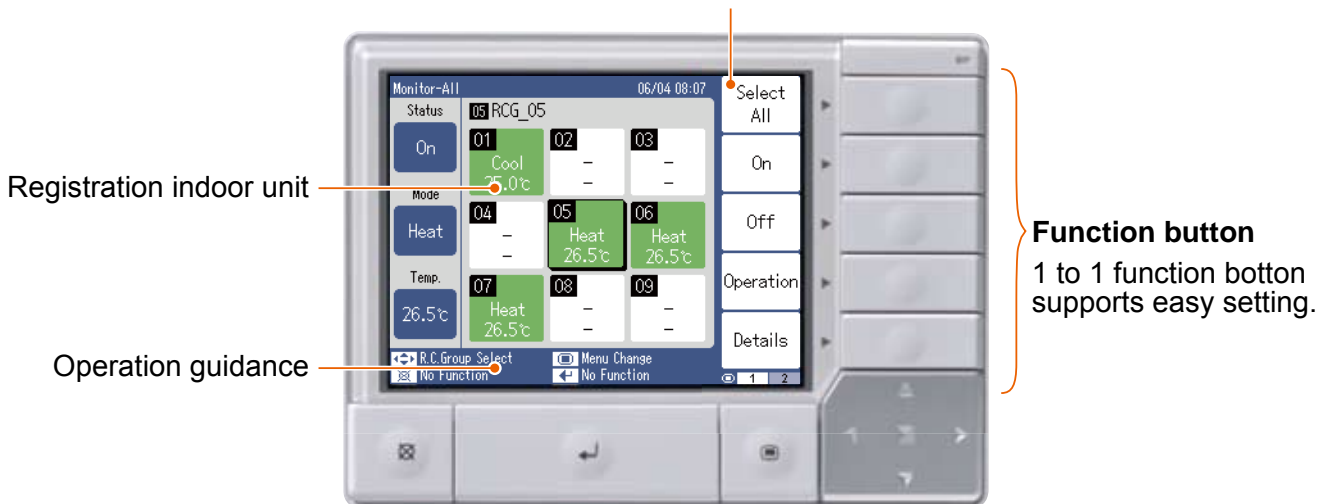
● System overview

- It allows multiple indoor units grouping (Max.16 groups controlled).
- Interlock with external device.

Emergency stop function
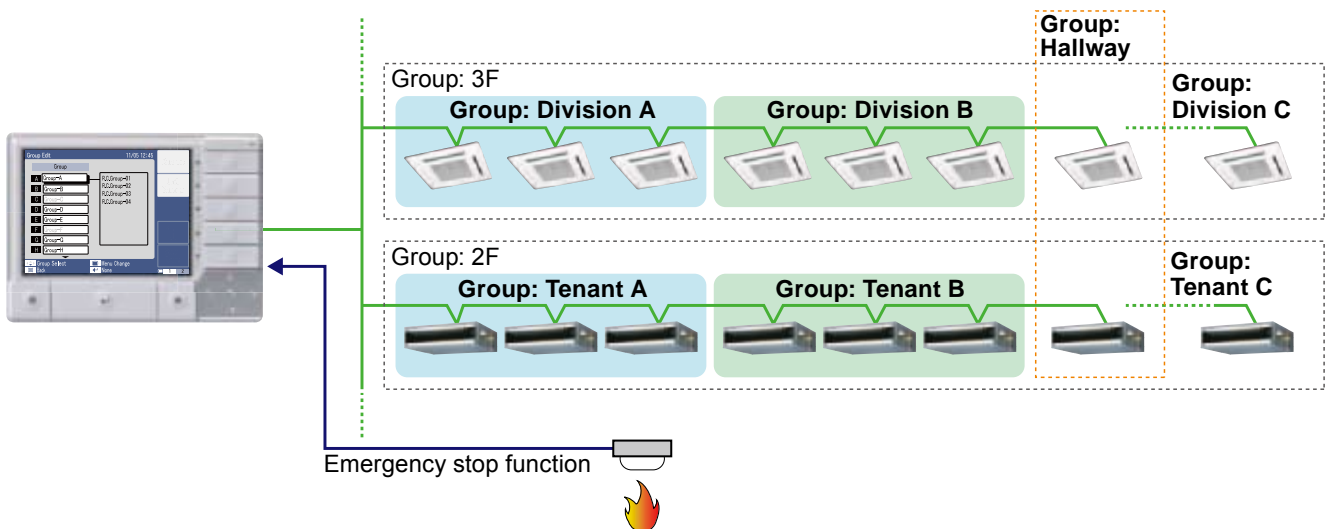
● Easy installation

- The control panel and power supply unit can be installed separately.
- For flexibility in installation, the Control panel can be built into the wall or fix on the wall.

Setting pattern 1

Power supply unit

Wall

Control panel

Control panel + Power supply unit

Setting pattern 2

Ceiling

Power supply unit

Extension cable (Service parts)

Control panel

Wall
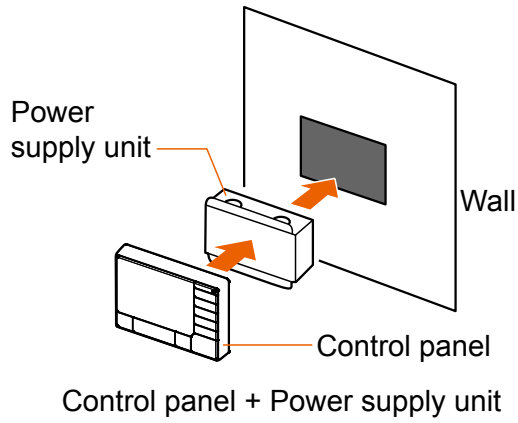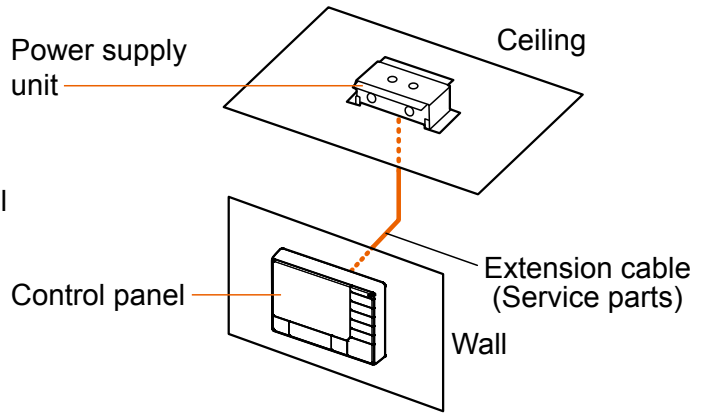
- Automatic or manual indoor unit registration

Indoor unit registration start

Indoor unit registration finish

Indoor unit registration
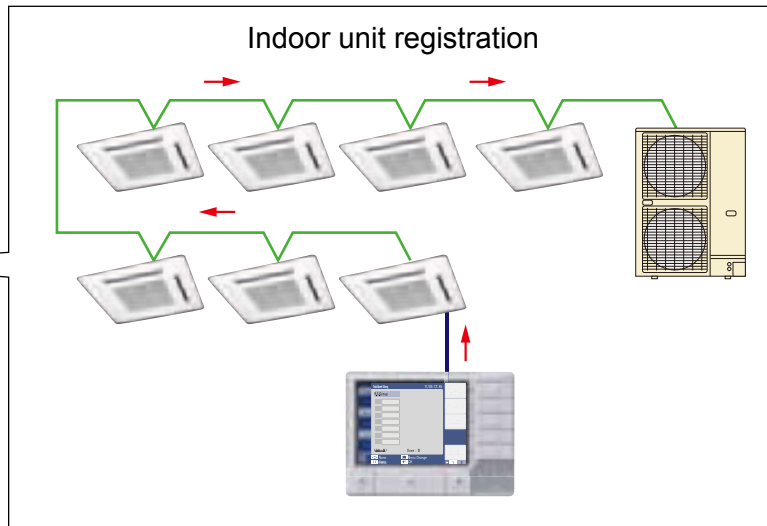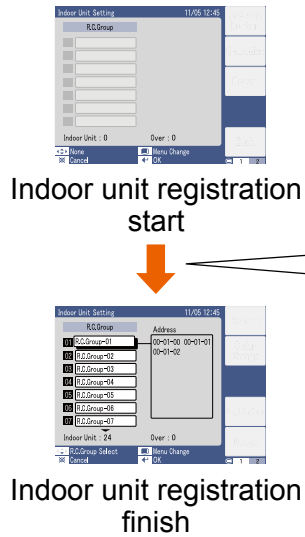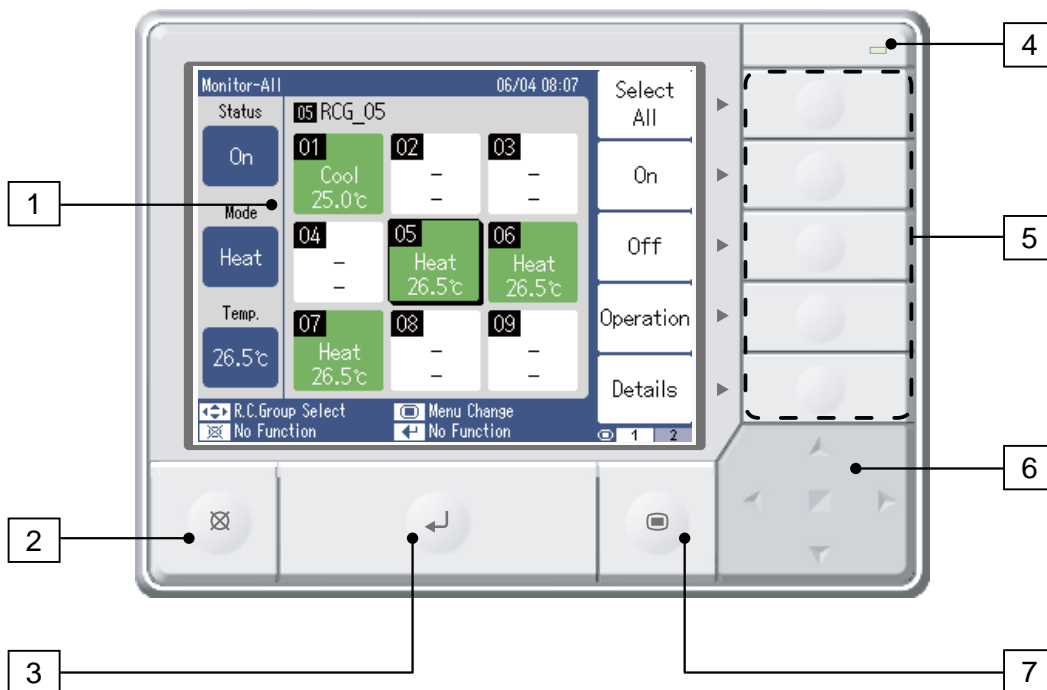
■ FUNCTIONS

1	LCD display	4	LED lamp
2	[CANCEL] button	5	Function buttons
3	[OK] button	6	[Arrow] button
		7	[MENU] button

■ MAIN FUNCTIONS AND SCREEN EXAMPLES

● Individual control

(On / Off, Mode, Set Temp, Fan Speed,
Air Flow Direction, Anti Freeze, Economy)
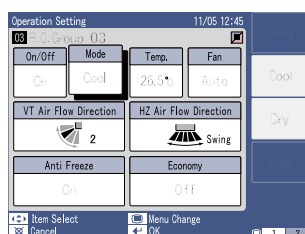
● Remote controller prohibition

(All, On / Off, Mode, Temp, Timer, Filter):

R.C prohibition setting prohibits individual
remote control operation from this controller
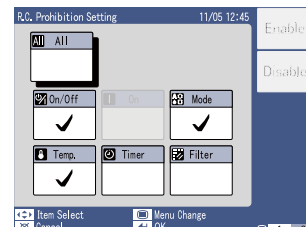
● Room temperature set point upper and lower limitation
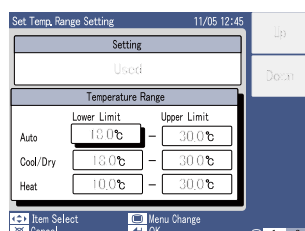
● Weekly timer

Weekly timer can set the timer by various combinations.
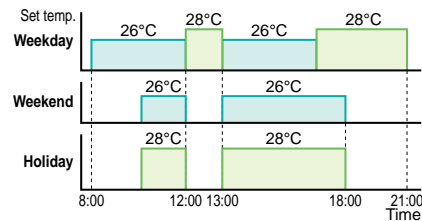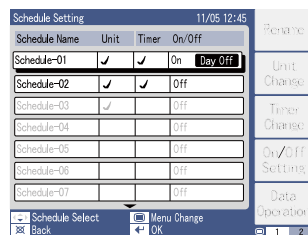
● Automatic clock adjustment

The time setting of each controller can be set in batch automatically.
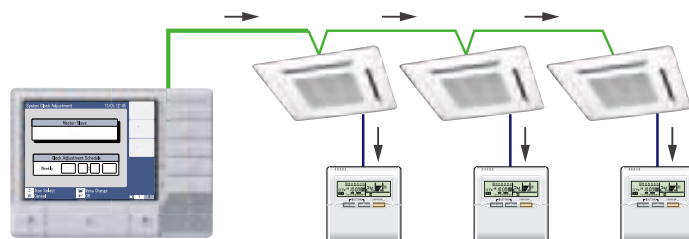
● Error history

- Max 200 Errors memorize.
- Suitable maintenance is possible by analysis of the error history data.
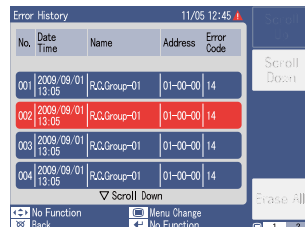
● Main screen display auto switching

Main Screen automatically switches at 5 steps by the number of connected indoor units.

	1	2	3	4	5
Number of connected indoor units	1 to 9 units	10 to 20 units	21 to 40 units	41 to 80 units	81 to 100 units
Display pattern	9 units display	20 units display	40 units display	80 units display	100 units display

- 9 / 20 units display pattern
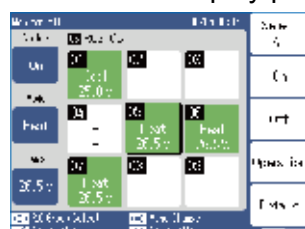
- 40 / 80 / 100 units display pattern

■ INSTALLATION

● Installation space

Make a service space to perform installation work.

Service space

150
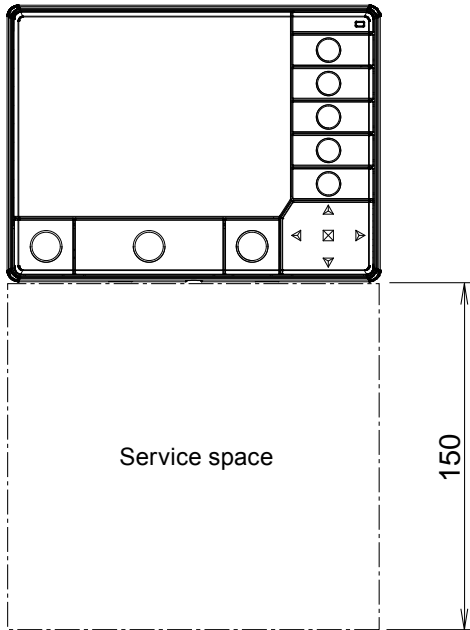
● Terminal names

● Power supply unit

Power supply terminal

POWER SUPPLY

L	N	⏚

Screw size: M4

Ground

Power supply cable
Reley connector
output: DC 5V

Power supply
1ø 100-240V

● Remote controller unit

Rear panel connecting
terminal

DC +5V (Red) ⎤ Power supply
GND (Black) ⎦ DC 5V

⏚ (Green) —— Ground

X1 ⎤ VRF LonWorks®
X2 ⎦ Transmission

⏚ —— Ground

(Rear panel side)
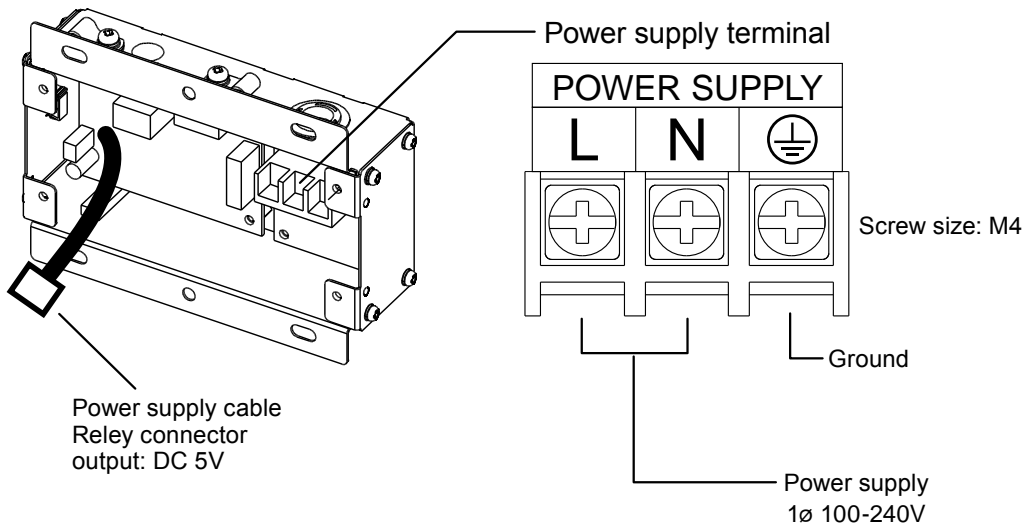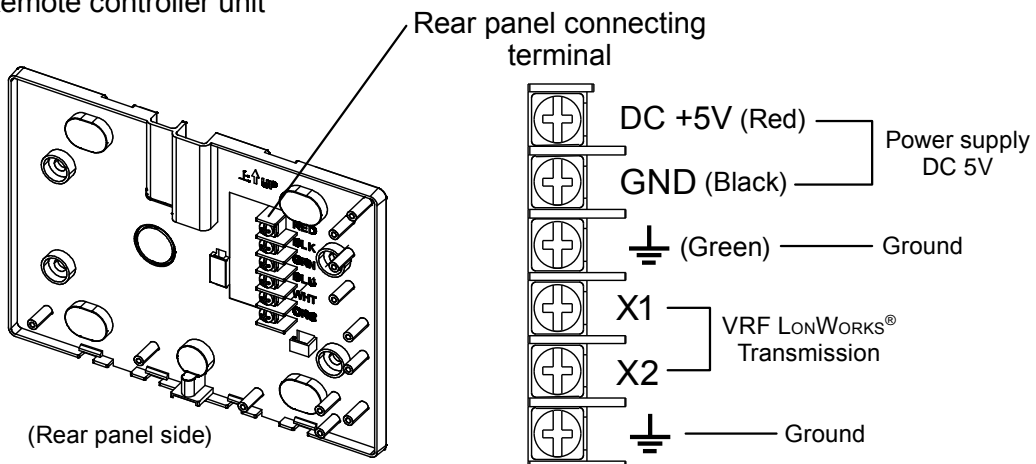
Screw size: M2.6

● Installation method

Setting pattern 1: Integrated type

- Power supply unit
- Wall
- Control panel
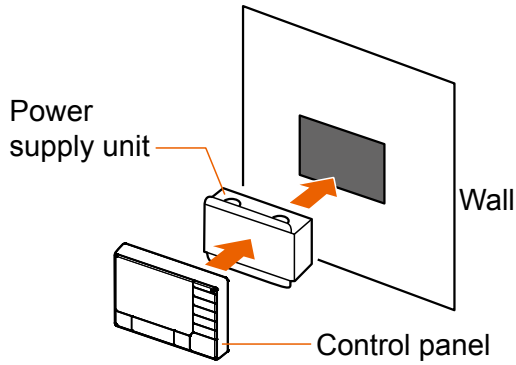
Setting pattern 2: Separate type

- Ceiling
- Power supply unit
- Control panel
- Extension cable (Service parts)
- Wall
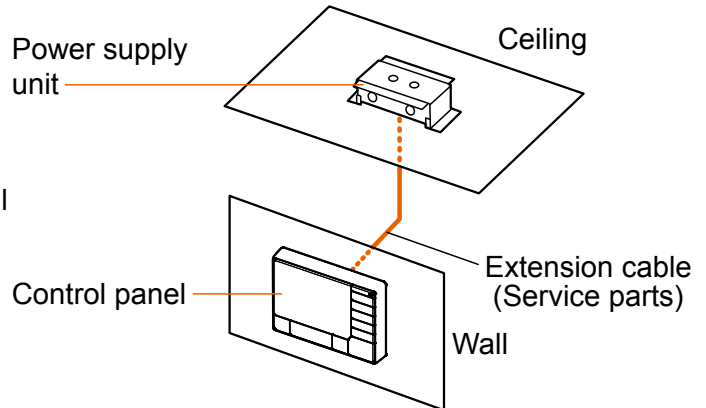
● Integrated type

Please refer to an installation manual for the details.

- Transmission cable
- Power supply cable
- One touch bush
- Binder
- Binder
- Screw x 6 (Accessories)
- Wall hole
- Power supply cable
- Relay connector
- One touch bush
- Screw x 4
- Binder
- CN13
- Connecting cable
- Screw

● **Separate type**

Screw x 2
(Accessories)

Screw x 2

Screw x 4

Screw x 2
(Accessories)

Ceiling

Screw x 2

Power unit
cover

Holder

One touch bush
x 2

Cutting out
(When wiring a transmission cable up
direction of the front panel)

Wall

Extension cable
(Service parts)

Binder x 2

Transmission
cable

Screw x 2
(Accessories)

CN13

Binder

Screw x 2
(Accessories)

Connecting
cable

Screw

● **The diagram of the mounting plate screw hole positions**

(Unit : mm)

46   46

84

99

R2.5

5

2-Ø5

135

■ DIMENSIONS

● Control unit

162

120

25.7

Front view

Side view

118

44.8

Rear view

● Power supply unit

25

22

29

99

Top view

46   46

84

99

67

R2.5

5   2-Ø5

135

39.2

Front view

Side view

■ PACKING LIST

Name and shape		Quantity	Application
Controller unit		1	
Power supply unit		1	
Holder		1 (Set)	For power supply unit installation (Used for separate type)
One-touch bush		2	For protection of power supply unit cable
Screw		8	Screw for Central Remote Controller installation (M4 x 20mm)
Connecting cable		1	For power supply unit connection
Binder		4	Prevents dropping off of the cable
CD-R		1	Include the operating manual for Central remote controller
Installation manual		1	
Operation manual		1	Instruction book for operation

■ WIRING SPECIFICATIONS
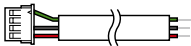
Use	Size		Wire type	Remarks
Power supply cable	Maximum	1.25mm²	245 IEC 57 or equivalent	1 ø AC100 - 240 V 50/60Hz, 2 Wire + ground (Always ground the unit)
	Minimum	0.5mm²		
Transmission cable	0.33mm² (22AWG)		LEVEL4 (NEMA) non-polar 2 core, twisted pair solid core Shielded	LONWORKS compatible cable
External input / output cable	0.33mm² (22AWG)		Polar 2core, Twisted pair	Use shielded cable in accordance with the regional cable standard.
Fuse capacity	5A			

■ SPECIFICATIONS

Model name		UTY-DCG✳
Power source voltage (V)		1 ø AC 100 - 240
Power source frequency (Hz)		50 / 60
Input Power (W)		3
Display		5.0-inch TFT color LCD display (QVGA)
External interface		Transmission line
		EXT IN: (Either emergency stop or batch operation / stop) (Either Dry contact or Apply voltage can be selected)
		EXT OUT: (Operation state, error state)
Usage temperature range (°C)		0 to 40
Usage humidity range (%)		0 to 85 (no condensation)
Storage temperature range (°C)		-20 to 70
Storage humidity range (%)		0 to 85 (no condensation)
Dimensions (mm) [H x W x D]	Control unit	120 x 162 x 25.7
	Power supply unit	99 x 135 x 39.2
Weight (g)	Control unit	308
	Power supply unit	355

■ OPTIONAL SERVICE PARTS

Please use the parts number shown below to order the cable from your sales representative.

Use the shielded type conncetion cable in accordance with the standard of the country.

Name and shape		Type	Parts No.
Extension cable (5m)		Shielded	9708798011

2-4. GROUP REMOTE CONTROLLER

■ MODEL : UTY - CGG∗

■ FEATURES
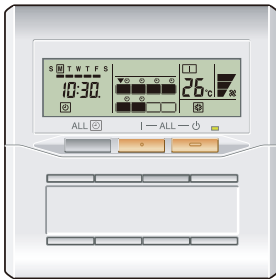
- Control and monitoring of up to 8 remote controller groups (Max18* indoor units) is possible with one group remote controller.
- The optional network convertor (Model name: UTY-VGGX) allows up to 4 Group Remote Controllers to be incorporated within the control layout. This flexibility is ideal for a number of different building sizes, types and applications.
- Up to 64 group remote controllers (with 16 network convertors UTY-VGGX) can be connected in one VRF network system.
- Two refrigerant systems can be covered by one network convertor.
- Start/Stop, operation mode, set temperature, timer control and fan speed can be controlled / monitored centrally or individually.
- Easy installation with a slim shape with no bulge in the back.
- One-touch Start/Stop operation of each indoor unit is possible. All the indoor units can also be easily operated by pressing an ALL ON, ALL OFF, or ALL TIMER ON/OFF button.

*: In the case of connection constitution for only J-II.

● High performance and compact size

Start/Stop, operation mode, set temperature and fan speed can be controlled / monitored centrally or individually.

Central control + ON/OFF control + Weekly timer →
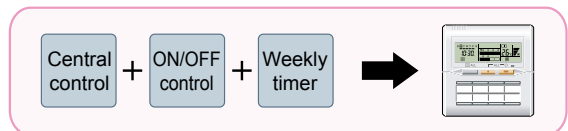
● Built-in weekly timers

The WEEKLY TIMER is provided as a standard function.
- The timer can be set up for up to 4 times/day.
  (Start/Stop, operation mode, set temperature)
- Allows separate settings for each day of the week.

ON / OFF switching	Cooling / Heating switching	Temperature switching (Peak power cut)	Temperature switching (Anti-freeze)	Stop setting
Air conditioning ON/OFF setting corresponding to air conditioning specification needs is possible.	Switching between the cooling mode and heating mode can be set by time.	Since peak power cut is performed in a planned way, setting which changes the room temperature linked with time is possible.	Low temperature heating operation can be set to prevent freezing in cold regions at night, etc.	Indoor unit stop setting at operation end time is possible.

● Control up to 8 remote controller groups

Control up to 8 remote controller groups
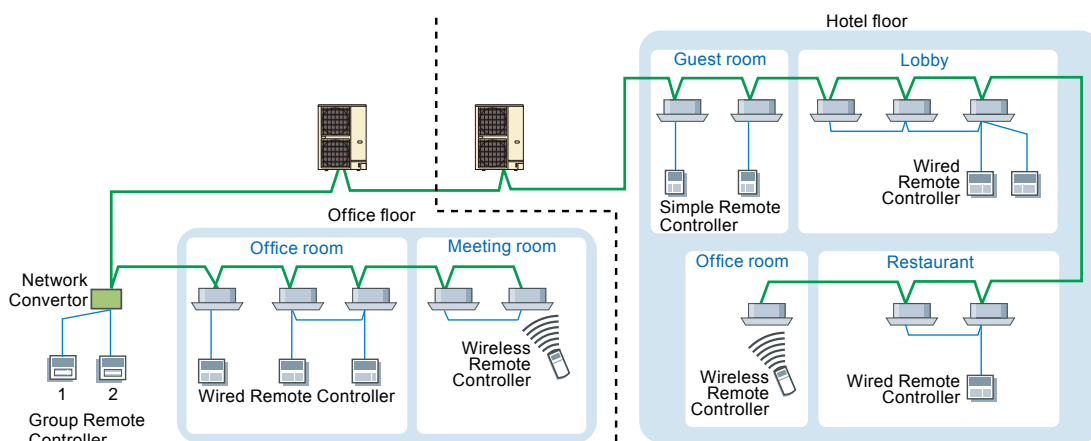
Group Remote Controller 1 : To control office floor and hotel floor (8 remote controller groups).
Group Remote Controller 2 : To control hotel floor (5 remote controller groups).

■ FUNCTIONS

1 Timer setting at all the connected indoor units is possible by centralized timer on the front panel.

2 All the connected indoor units can be turned on / off simultaneously by centralized ON/OFF button on the front of the cover.

3 The indoor unit can be quickly turned on and off by ON / OFF button of each indoor unit on the front of the door.

With cover closed

ALL ⏲ | — ALL — ⏻
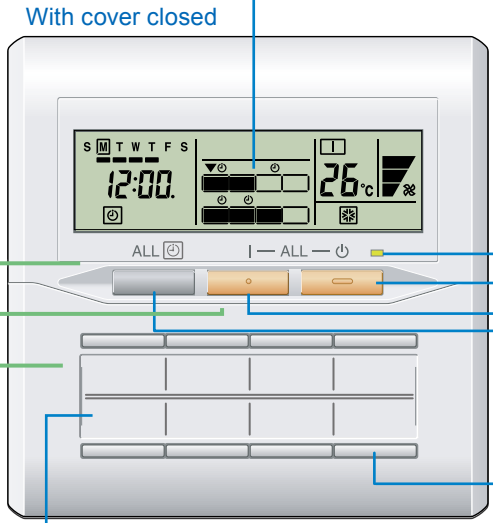
Indoor Unit Operation Indicators

Timer setting at all the connected indoor units is possible by centralized timer on the front panel.
■ : On   □ : Off
● : Timer operation   ▼ : Selection

Operation Lamp

This is on if any of the indoor units is operating. This flashes if any of the indoor units has malfunction(s).

ALL OFF Button

Press the ALL OFF button to turn off all of the indoor units.

ALL ON Button

Press the ALL ON button to turn on all of the indoor units.

ALL TIMER Button

Press the ALL TIMER button to turn the timer operation on or off for all indoor units.

Start / Stop Button

Press the ON / OFF button to turn the corresponding indoor unit on or off.

Indoor Unit Name Labels

Write the names of the indoor units on the included labels and attach them.

Timer and Clock Display and setting

- Setting Display
- Day Display
- Timer and Clock Display
- Timer Mode Display

With cover open

ALL ⏲ | — ALL — ⏻

- Timer Mode (DELETE) Button
- DAY Button
- Set Time Button
- PROGRAM (CLOCK ADJUST) Button
- ENTER Button
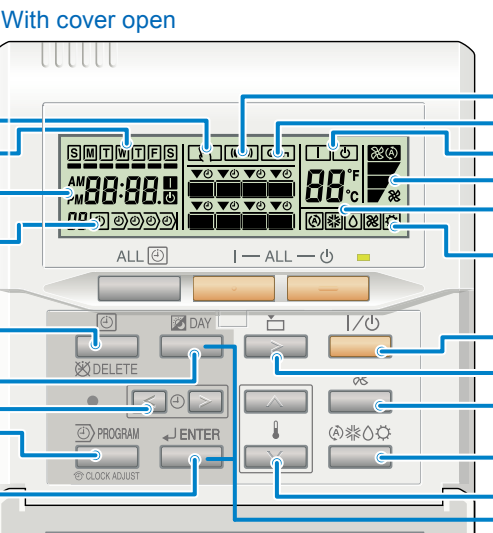
Displaying the Status and Controlling indoor units

- Transmission Display
- Operation Lock Display
- ON / OFF Display
- Fan Speed Display
- Set Temperature Display
- Operation Mode Display
- Start / Stop Button
- Select Button
- Fan Control Button
- *1, *2, *3
- Operation Mode Button
- Set Temperature Button
- Child Lock Function

---

*1: "AUTOⒶ" is not available for a heat pump model unless it is set up master indoor unit.

*2: "FAN❊" is not available for a heat pump model

*3: "HEAT☼" is not available for a cooling only model

■ SYSTEM DIAGRAM

● When connecting one group remote controller
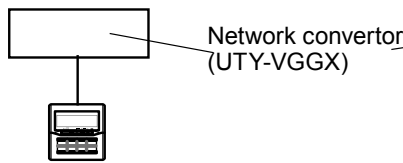
● When multiple group remote controllers are connected

Network convertor (UTY-VGGX)

Remote controller cable

Network convertor (UTY-VGGX)
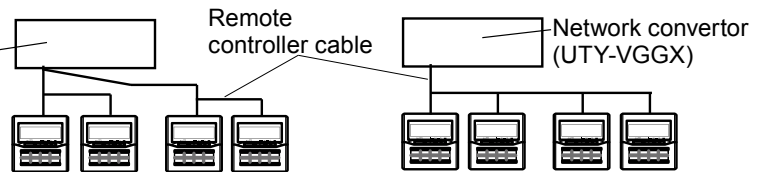
- Total remote controller cable length : Max. 100m.
- Connectable group remote controller : Max. 4units / convertor.
- Use of a terminal box is recommended when a junction is made in the wiring.

■ ELECTRICAL WIRING

Group Remote Controller

Transmission Line

Transmission Line

Transmission Line

SWITCH

FUSE (3A)

1Φ50 Hz
220-240V

1. 12V
2. Signal
3. COM

G

L   N
POWER

X1   X2
TRANSMISSION

Y1 Y2 Y3 | J1 J2 J3
REMOTE | INDOOR UNIT
REMOTE CONTROLLER LINE

Power Supply

NETWORK CONVERTOR

Group remote controller cable
(Field supplied) cross-section 0.33 mm^2
Polar 3 - core, Shielded.

■ DIMENSIONS

[Unit : mm]

120

18

30   33.5

Hole

23

45.3

15.3

4.5

9

63.5

83.5

4.5

12.5

4.5   6

120

Hole x 2

Hole x 3

S M T W T F S
12:00   24℃

ALL |— ALL —

Name plate (Accessory)
(84 x 21)

Front View

Side View

Rear View

■ PACKING LIST

Name and shape	Quantity	Application
Label	4	Use this for writing the names of the indoor units that have been registered.
Screw (M4x16mm)	2	For installing the remote controller
Binder	1	For remote controller and remote controller cable binding
Installation manual	1	
Operating manual	1	

■ WIRING SPECIFICATIONS

Use	Size	Wire type	Remarks
Remote controller cable	0.33mm^2 (22AWG)	Polar 3 core	Use sheathed PVC cable or shielded cable in accordance with the regional cable standard.

■ SPECIFICATIONS

Model name	UTY - CGG∗
Dimensions [H x W x D] (mm)	120 x 120 x 18
Weight (g)	160

2-5. WIRED REMOTE CONTROLLER

■ MODEL : UTY - RNK*

■ FEATURES
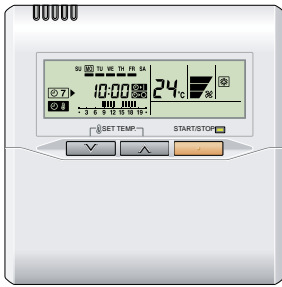
- Various timer setup (ON / OFF / WEEKLY) are possible.
- Equipped with weekly timer as standard function. (Start / Stop function is twice per day for a week)
- When setting up a timer, start / stop and a temperature setup can be changed.
- When a failure occurs,the error code is displayed.
- Error history.(Last 16 error codes can be accessed.)
- Up to 9 indoor units can be simultaneously controlled.
- The room temperature can be controlled by being detective the temperature accurately with Built-in thermo sensor.

● Powerful features and compact size

| Individual control | + | Thermo sensor | + | Weekly timer | + | Setback timer | = | Wired remote controller |

● Accurate and comfortable

Indoor temperature can be detected accurately by the inclusion of a thermo sensor in the body of the wired controller.

Our system can correspond to various scenes.

This wired remote controller and the optional remote sensor allows flexibility in sensor location, and suitable for all requirements.

Sensor part

Thermo sensor display

Control part for changing the thermo sensor
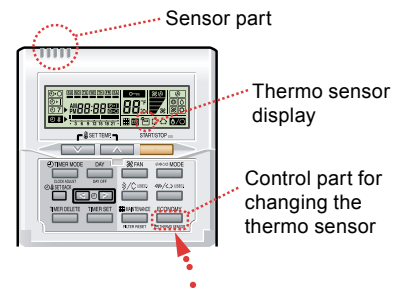
● Built-in timers

Weekly timer	**Setback timer**
Possible to set ON/OFF time to operate twice each day of the week.	Possible to set temperature for two time spans and for each day of the week.

Easy-to-understand time bar display

Screen after setup

Example : setup screen (Set to Wednesday: 8:00 to 20:00.)

24°C

0 3 6 9 12 15 18 21 Time

Example : setup screen (Set from Sunday to Saturday: 12:00 to 15:00, 28 °C.)

28°C

0 3 6 9 12 15 18 21 Time

| **At "Weekly timer" + "Set back timer" setup** | |

24°C → 28°C → 24°C

24°C   28°C

0 3 6 9 12 15 18 21 Time

● Easy-to-understand operation

Timer area
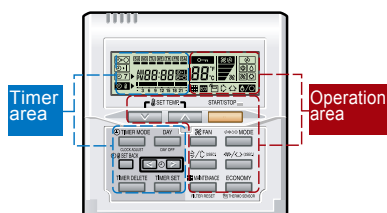
Operation area

[Variable timer control]

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

● Simple installation

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

European switch box

JIS box
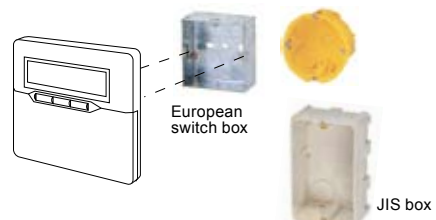
■ FUNCTIONS
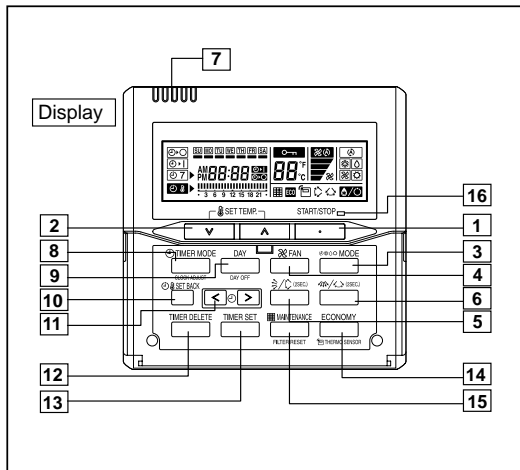
Display

Display panel
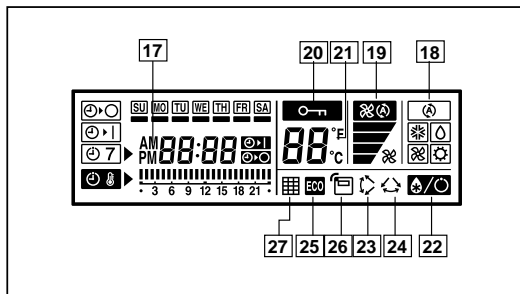
1 START/STOP button
   Pressed to start and stop operation.

2 Set Temperature button
   Selects the setting temperature.(18-30°C[COOL], 10-30°C[HEAT])

3 Operation mode button *2
   Selects the operating mode (AUTO Ⓐ*1, COOL ❄, DRY◊ ,
                               FAN ❀*3, HEAT ✿*4).

4 Fan control button
   Selects the fan speed (AUTO ❀Ⓐ, LOW ━❅, MED ▰❅, HIGH ▰❅).

5 Vertical air flow direction and swing button
   Press for two seconds to change the swing mode

6 Horizontal air flow direction and swing button
   Press for two seconds to change the swing mode.

7 Built-in thermo sensor
   Detect room temperature.

8 Timer mode (CLOCK ADJUST) button
   Selects the timer mode (OFF TIMER, ON TIMER, WEEKLY TIMER)
   Set the current time.

9 Day (DAY OFF) button
   Temporarily cancels of one day timer.

10 Set back button
   Pressed select the set back timer.

11 Set time button
   Pressed to select the set back timer.

12 Delete button
   The schedule of a weekly timer is deleted.

13 Set button
   Sets the date, hour, minute and on-off time.

14 Economy button / Thermo sensor button

15 Filter button

16 Operation lamp
   Lights during operation and when the timer is on.

17 Timer and clock display

18 Operation mode display

19 Fan speed display

20 Operation lock display

21 Temperature display
   Displayed temperature is set temperature.

22 Defrost display
   Indicates during the oil recovery and defrosting operation.

23 Vertical swing display

24 Horizontal swing display

25 Economy display

26 Thermo sensor display

27 Filter display

*1 : "AUTOⒶ" is not available for a heat pump model unless it is set up administrative indoor unit.

*2 : Indoor unit can be set to administrative indoor unit by pressing "MODE" button for five seconds or
     more. (Refer to chapter 6. 6-14.)

*3 : "FAN❀" is not available for a heat pump model.

*4 : "HEAT✿" is not available for a cooling only model.

■ SYSTEM DIAGRAM

● 1 remote controller

Indoor unit

A

Remote controller

● 2 remote controllers

Indoor unit

B   C

Master   Slave
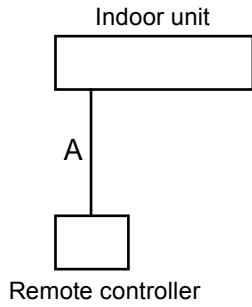
Remote controllers
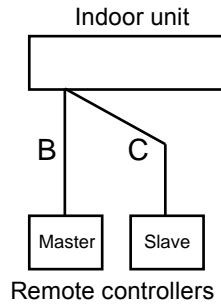
A , B , C : Remote controller cable.
Refer to 4-4 for detail specifications.
A ≦500m ; B+C ≦500m

■ ELECTRICAL WIRING

● 1 remote controller

Indoor unit

REMOTE CONTROLLER

G   1 2 3

G   1 2 3

Remote controller

● 2 remote controllers

Indoor unit

REMOTE CONTROLLER

G   1 2 3

G   1 2 3   G   1 2 3

Master   Slave

Remote controllers

1 (RED) : 12V
2 (WHITE) : Signal
3 (BLACK) : COM

■ DIMENSIONS

[Unit : mm]

120

18

120

120

SET TEMP.   START/STOP

TIMER MODE   DAY   FAN   MODE

CLOCK ADJUST   DAY OFF

SET BACK   < >

TIMER DELETE   TIMER SET   MAINTENANCE   ECONOMY

FILTER RESET   THERMO SENSOR

Front View

Side View

30   33.5

Hole

23

45.3   4.5   9

15.3

63.5   83.5

4.5

12.5

4.5   6

Hole x 2

Hole x 3

Rear View

■ INSTALLATION

● Connection Pattern

Note: Connection pattern is different according to type of Indoor unit.

Indoor unit types	Connection Pattern
All Cassette type	Pattern A
All Duct type	
All Ceiling type	
Compact Wall Mounted type	Pattern B
Wall Mounted type	

● Pattern A

Connect the end of remote controller cable directly to the exclusive terminal block.

M4 screw

Terminal block

Remote controller cable

Remote controller terminal block

Indoor unit PCB

Outdoor unit / Power supply terminal block

Note: It may be failed if it is connected to the outdoor unit or the terminal block for power supply.

● Pattern B

1) Modify the remote controller cable as per below methods.

● Use a tool to cut off the terminal on the end of the remote controller cable and then remove the insulation from the cut end of the cable as shown in Fig.

● Connect the remote controller cable and connecting cable as shown in Fig.

● Be sure to insulate the connection between the cables.

20 mm

Remote controller cable

Connecting cable

White
Red

White
Red

Black

Black

Insulated connection

(Compact Wall Mounted type)

Connecting cable

20 mm

Remote controller cable

White
Red

White
Red

Black

Black

Insulated connection

(Wall Mounted type)

2) Method of connecting remote controller cable

● Connecting cable made by above-mentioned 1) is connected with PCB of Indoor unit.

Remote controller cable

Connecting cable

Indoor unit PCB

(Compact Wall Mounted type)

Remote controller cable

Connecting cable

Indoor unit PCB

(Wall Mounted type)

■ PACKING LIST

Name and shape	Quantity	Application
Remote controller cable *1	10m	For connecting the remote controller
Screw (M4 x 16mm)	2	For installing the remote controller
Binder	1	For remote controller and remote controller cable binding
Installation manual	1	
Operating manual	1	

*1 : UTY-RNKYT does not contain cables.

■ WIRING SPECIFICATIONS

Use	Cable size	Wire type		Remarks
Remote controller cable	0.33mm^2 (22AWG)	Polar 3 core	UTY-RNKY UTY-RNKG	Use sheathed PVC cable.
			UTY-RNKYT	Use shielded cable (field supplied) in accordance with the regional cable standard.

■ SPECIFICATIONS

Model name	UTY - RNK∗
Dimensions [H x W x D] (mm)	120 x 120 x 18
Weight (g)	160

CONTROL SYSTEM

CONTROL SYSTEM

2-6. SIMPLE REMOTE CONTROLLER (With Operation mode)

■ MODEL : UTY - RSK∗

■ FEATURES

- Easy operation.
- Built-in background light function.
- Easy installation with a slim shape with no bulge in the back.
- Error history.(Last 16 error codes can be accessed.)
- Up to 9 indoor units can be simultaneously controlled.
- Can be installed onto SW-BOX. (applies to European and other country's standard)

● User-friendly operation

- Provides access to basic operations, such as Start / Stop, Fan speed, operation mode and room temperature setting.
- A large Start / Stop button is provided in the centre of the remote controller unit for easy operation.
- Following an error display, diagnostics can be carried out on the controller.

● Background light

- Background light enables easy operation in a darkened room.
- Background light activates during all button operations, and lasts 10 seconds in operating mode and 5 seconds in stop mode after a button is pressed.

● Simple installation

Can be mounted on the European switch Box (installation dimension: 60mm) or the JIS Built-in Box (installation dimension: 83.5mm).

European switch box

JIS Built-in box

60mm

83.5mm

■ FUNCTIONS

Display panel

1　START/STOP button
　　Pressed to start and stop operation.

2　Display background light
　　Lights during operation.

3　Operation lamp
　　Lights during operation.

4　Fan control button
　　Selects the fan speed (AUTO ❆⊠, HIGH ▮▮▸❅, MED ▮▸❅, LOW ▸❅).

5　Set temperature button
　　Selects the setting temperature.(18-30°C[COOL], 16-30°C[HEAT])

6　Operation mode button
　　Selects the operating mode (AUTO Ⓐ *1, COOL ❆, DRY◊ ,
　　　　　FAN ❆ *2, HEAT ☼ *3).

7　Standby display
　　Indicates during the oil recovery and defrosting operation.

8　Power source display
　　Indicates the main power ON.

9　Central control display
　　Indicates when function is locked from Touch Panel Controller or
　　System Controller.

10　Fan speed display

11　Set temperature
　　Indicates Error history number. *4
　　Indicates Indoor unit address. *5

12　Operating mode display

13　(Upper) Indicates the error code *4 *6 / the refrigerant

　　system address. *5

　　(Lower) Indicates the remote controller address. *4 *5 *6

*1 : "AUTOⒶ" is not available for a heat pump model unless it is set up master indoor unit.

*2 : "FAN❆" is not available for a heat pump model

*3 : "HEAT☼" is not available for a cooling only model

*4 : during Error code history display mode.

*5 : during address display mode.

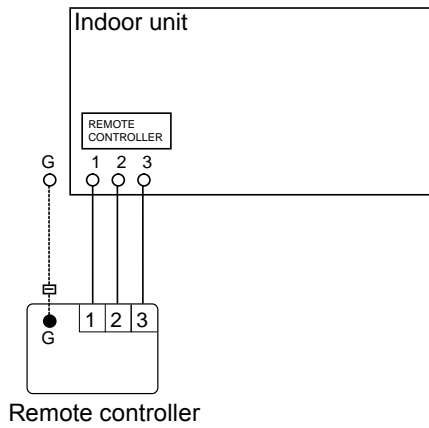*6 : during self Diagnosis mode.

■ SYSTEM DIAGRAM
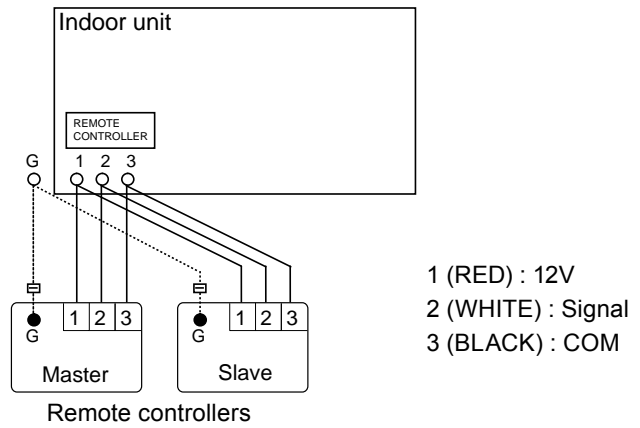### ● 1 remote controller　　● 2 remote controllers

A , B , C : Remote controller cable.
　　　Refer to chapter 6. 4-4 for detail specifications.
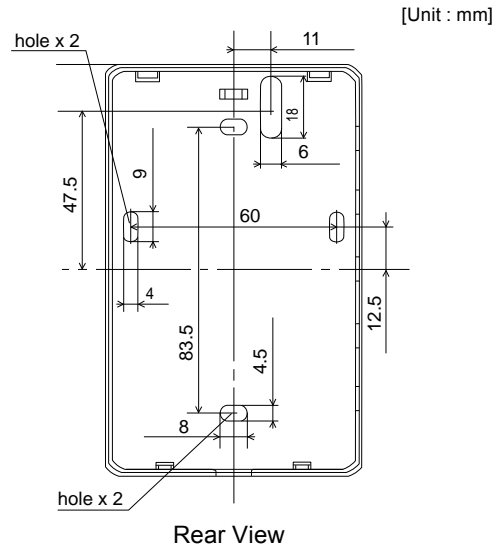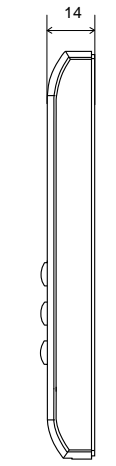　　　A ≦500m ; B+C ≦500m

■ ELECTRICAL WIRING

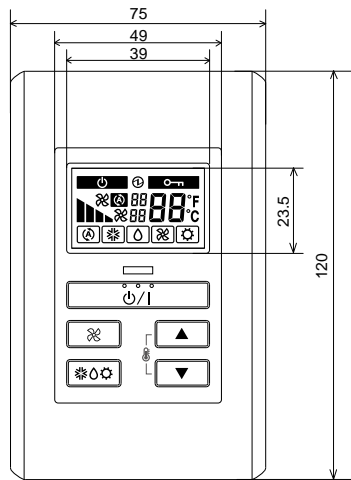## ● 1 remote controller

Indoor unit

REMOTE CONTROLLER

G   1 2 3

1 2 3
G

Remote controller

● 2 remote controllers

Indoor unit

REMOTE CONTROLLER

G   1 2 3

G 1 2 3   G 1 2 3
Master   Slave

Remote controllers

1 (RED) : 12V
2 (WHITE) : Signal
3 (BLACK) : COM

■ DIMENSIONS

[Unit : mm]

75
49
39
23.5
120

Front View

14

Side View

hole x 2
11
18
6
47.5
9
60
4
83.5
4.5
12.5
8
hole x 2

Rear View

■ INSTALLATION

● Connection Pattern

Note: Connection pattern is different according to type of Indoor unit.

Indoor unit types	Connection Pattern
All Cassette type	Pattern A
All Duct type	
All Ceiling type	
Compact Wall Mounted type	Pattern B
Wall Mounted type	

● Pattern A

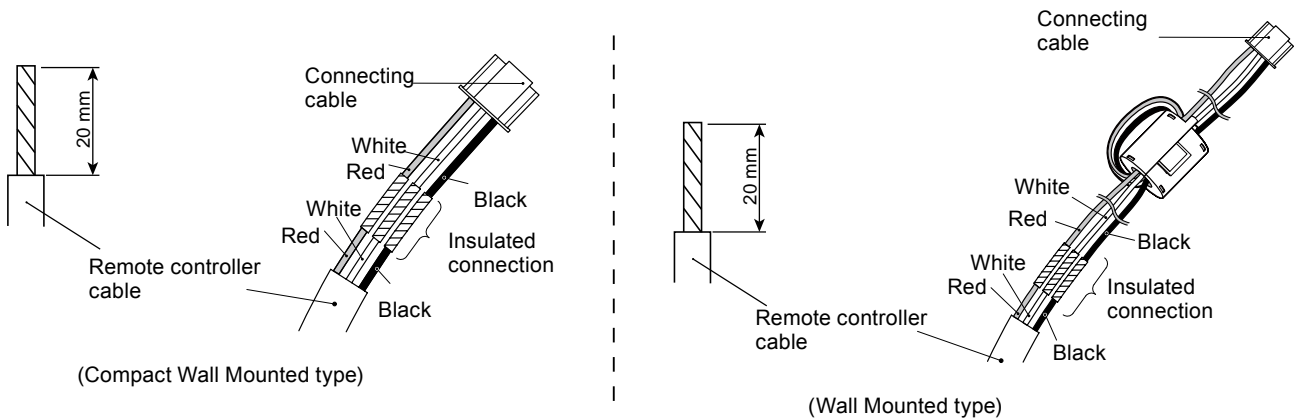Connect the end of remote controller cable directly to the exclusive terminal block.

M4 screw

Terminal block

Remote controller cable

Remote controller terminal block

Indoor unit
PCB

Outdoor unit /
Power supply
terminal block

Note: It may be failed if it is connected to the outdoor unit or the terminal block for power supply.

● Pattern B

1) Modify the remote controller cable as per below methods.

● Use a tool to cut off the terminal on the end of the remote controller cable and then remove the insulation from the cut end of the cable as shown in Fig.

● Connect the remote controller cable and connecting cable as shown in Fig.

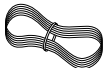● Be sure to insulate the connection between the cables.

20 mm

Connecting cable

White
Red

White
Red

Black

Black

Insulated connection

Remote controller cable

(Compact Wall Mounted type)

Connecting cable

20 mm

White
Red

White
Red

Black

Black

Insulated connection
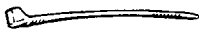
Remote controller cable

(Wall Mounted type)

2) Method of connecting remote controller cable

● Connecting cable made by above-mentioned 1) is connected with PCB of Indoor unit.

Remote controller cable

Connecting cable

Indoor unit PCB

(Compact Wall Mounted type)

Remote controller cable

Connecting cable

Indoor unit PCB

(Wall Mounted type)

■ PACKING LIST

Name and shape	Quantity	Application
Remote controller cable *1	10m	For connecting the remote controller
Screw (M4 x 16mm)	2	For installing the remote controller
Binder	1	For remote controller and remote controller cable binding
Installation manual	1	
Operating manual	1	

*1 : UTY-RSKYT does not contain cables.

■ WIRING SPECIFICATIONS

Use	Cable size	Wire type		Remarks
Remote controller cable	0.33mm^2 (22AWG)	Polar 3 core	UTY-RSKY / UTY-RSKG	Use sheathed PVC cable.
			UTY-RSKYT	Use shielded cable (field supplied) in accordance with the regional cable standard.

■ SPECIFICATIONS

Model name	UTY - RSK✻
Dimensions [H x W x D] (mm)	120 x 75 x 14
Weight (g)	90

2-7. SIMPLE REMOTE CONTROLLER (Without Operation mode)

■ MODEL : UTY - RHK∗

Note :

A part of function is limited. It is recommended to use it together with other type controller.

■ FEATURES

- Easy operation.
- Built-in Backgroud Light function.
- Easy installation with a slim shape with no bulge in the back.
- Error history.(Last 16 error codes can be accessed.)
- Up to 9 indoor units can be simultaneously controlled.
- Can be installed onto SW-BOX. (applies to European and other country's standard)
- Concentrates on the basic operations such as Start/Stop, Fan Control, and Temperature Setting.

● User-friendly operation

- Provides access to basic operations, such as Start / Stop, Fan speed and room temperature setting.
- A large Start / Stop button is provided in the centre of the remote controller unit for easy operation.
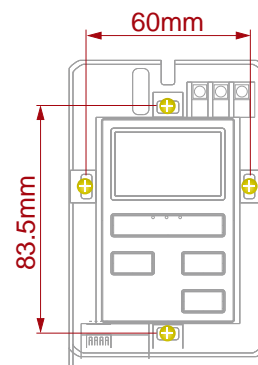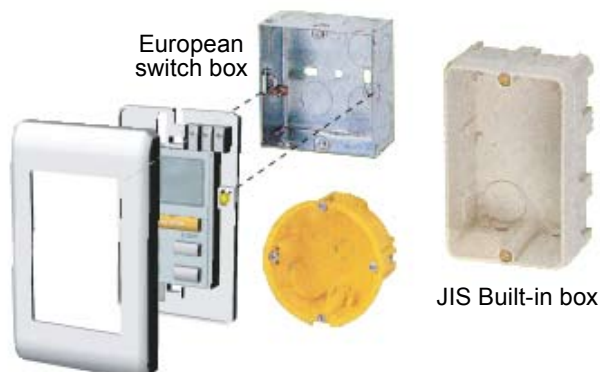- Following an error display, diagnostics can be carried out on the controller.

● Background light

- Background light enables easy operation in a darkened room.
- Background light activates during all button operations, and lasts 10 seconds in operating mode and 5 seconds in stop mode after a button is pressed.
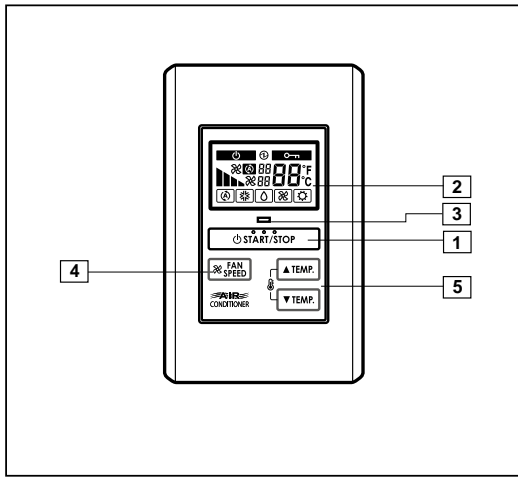
● Simple installation

Can be mounted on the European Switch Box (installation dimension: 60mm) or the JIS Built-in Box (installation dimension: 83.5mm).

European switch box

JIS Built-in box

60mm

83.5mm

■ FUNCTIONS

| | START/STOP button |
|1|Pressed to start and stop operation.|

2	Display background light
	Lights during operation.

3	Operation lamp
	Lights during operation.

4	Fan control button
	Selects the fan speed (AUTO ❄️🌀, HIGH ▮▮◣❄, MED ▮◣❄, LOW ◣❄).

5	Set temperature button
	Selects the setting temperature.(18-30°C[COOL], 16-30°C[HEAT])

6	Standby display
	Indicates during the oil recovery and defrosting operation.

7	Power source display
	Indicates the main power ON.

8	Central control display
	Indicates when function is locked from Touch Panel Controller or System Controller.

9	Fan speed display

Display panel

10	Set temperature
	Indicates Error history number. *1
	Indicates Indoor unit address. *2

11	Operating mode display

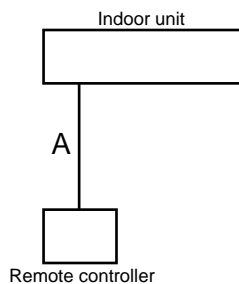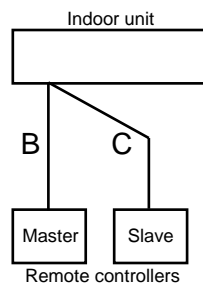| 12	(Upper) Indicates the error code *1, *3 / the refrigerant system address. *2
	(Lower) Indicates the remote controller address. *1, *2, *3
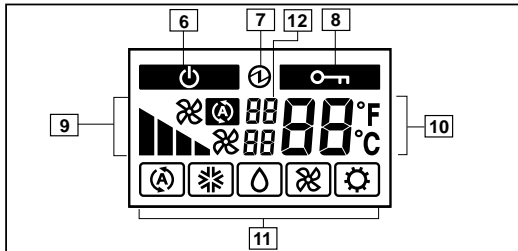
*1 : during Error code history display mode.

*2 : during address display mode.

*3 : during self Diagnosis mode.

■ SYSTEM DIAGRAM

● 1 remote controllers

● 2 remote controllers

Indoor unit

A

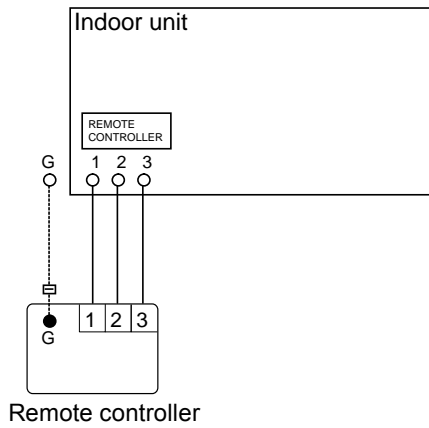Remote controller

Indoor unit

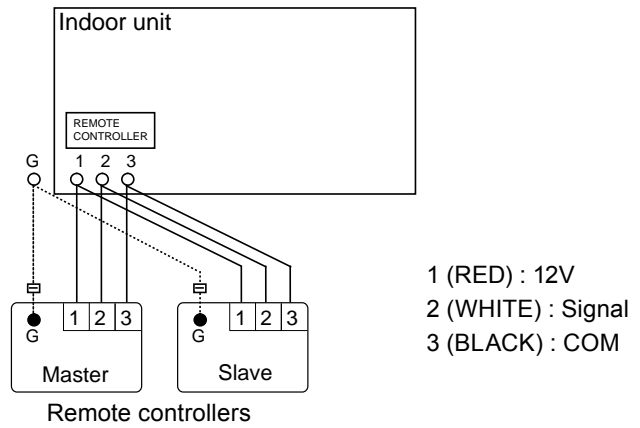B   C

Master   Slave

Remote controllers

A , B , C : Remote controller cable.
    Refer to chapter 6. 4-4 for detail specifications.
    A ≦500m ; B+C ≦500m

■ ELECTRICAL WIRING

● 1 remote controller

Indoor unit

REMOTE CONTROLLER

G 1 2 3

G 1 2 3

Remote controller

● 2 remote controllers

Indoor unit

REMOTE CONTROLLER

G 1 2 3

G 1 2 3   G 1 2 3

Master   Slave

Remote controllers

1 (RED) : 12V
2 (WHITE) : Signal
3 (BLACK) : COM

■ DIMENSIONS

[Unit : mm]

75
49
39

23.5

120

START/STOP

FAN SPEED   ▲ TEMP.

AIR CONDITIONER   ▼ TEMP.

Front View

14

Side View

hole x 2

11

18

6

47.5

9

60

4

83.5

4.5

8

12.5

hole x 2

Rear View

■ INSTALLATION

● Connection Pattern

Note: Connection pattern is different according to type of Indoor unit.
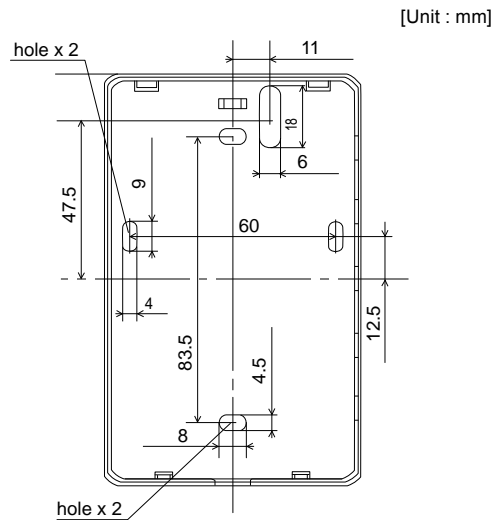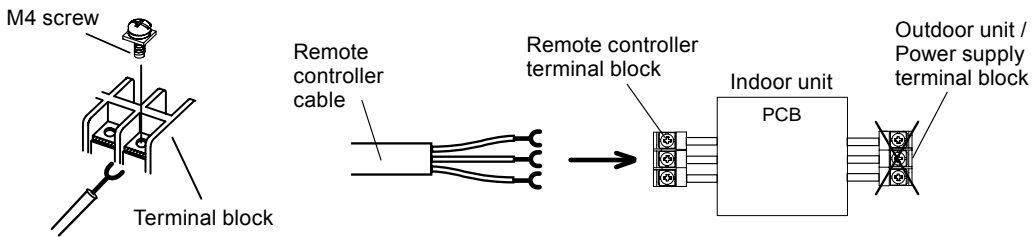
Indoor unit types	Connection Pattern
All Cassette type	Pattern A
All Duct type	
All Ceiling type	
Compact Wall Mounted type	Pattern B
Wall Mounted type	

● Pattern A

Connect the end of remote controller cable directly to the exclusive terminal block.

Note: It may be failed if it is connected to the outdoor unit or the terminal block for power supply.

● Pattern B

1) Modify the remote controller cable as per below methods.

● Use a tool to cut off the terminal on the end of the remote controller cable and then remove the insulation from the cut end of the cable as shown in Fig.

● Connect the remote controller cable and connecting cable as shown in Fig.

● Be sure to insulate the connection between the cables.

(Compact Wall Mounted type)

(Wall Mounted type)

2) Method of connecting remote controller cable

● Connecting cable made by above-mentioned 1) is connected with PCB of Indoor unit.

(Compact Wall Mounted type)

(Wall Mounted type)

■ PACKING LIST

Name and shape		Quantity	Application
Remote controller cable *1		10m	For connecting the remote controller
Screw (M4 x 16mm)		2	For installing the remote controller
Binder		1	For remote controller and remote controller cable binding
Installation manual		1	
Operating manual		1	

*1 : UTY-RHKYT does not contain cables.

■ WIRING SPECIFICATIONS

Use	Cable size	Wire type		Remarks
Remote controller cable	0.33mm^2 (22AWG)	Polar 3 core	UTY-RHKY UTY-RHKG	Use sheathed PVC cable.
			UTY-RHKYT	Use shielded cable (field supplied) in accordance with the regional cable standard.

■ SPECIFICATIONS

Model name	UTY - RHK✳
Dimensions [H x W x D] (mm)	120 x 75 x 14
Weight (g)	90

2-8. WIRELESS REMOTE CONTROLLER

■ MODEL : UTY - LNH∗

■ FEATURES

- Four kinds of timer setup (ON / OFF / PROGRAM / SLEEP) are possible.
- Up to 9 indoor units connected within the remote controller group can be simultaneously controlled.
- Can be used jointly with wired remote controllers .
- Easy to change custom code (4 patterns).

● Built-in timers

Select from four different timer programs (On / Off / Program / Sleep).

● Program timer

The program timer operates the ON and OFF timer once within a 24 hour period.
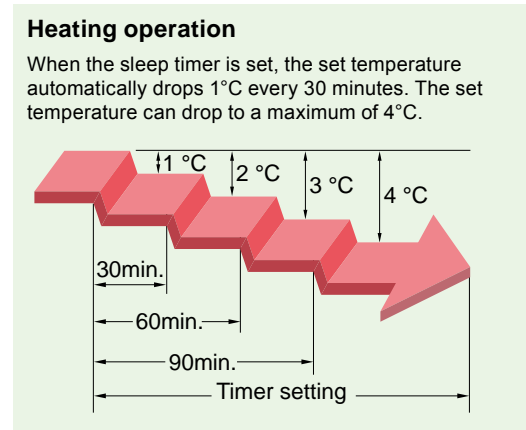
● Sleep timer

The sleep timer function automatically corrects the temperature thermostat setting according to the time setting to prevent excessive cooling and heating while sleeping.

Cooling operation / dry operation

When the sleep timer is set, the set temperature automatically rises 1°C every hour. The set temperature can rise up to a maximum of 2°C.

Timer setting
60min.
1 °C
2 °C

Heating operation

When the sleep timer is set, the set temperature automatically drops 1°C every 30 minutes. The set temperature can drop to a maximum of 4°C.

1 °C
2 °C
3 °C
4 °C
30min.
60min.
90min.
Timer setting

● Easy installation and operation

Mixed-up

After code change
A B C D
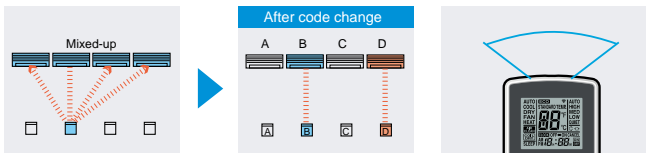
- Custom code is used for controlling right indoor unit. (Up to 4 codes can be set)

- Wide and precise transmitting range.

● System addressing

- During installation work, system addressing can be performed using the wireless remote controller, thus eliminating manual switch setting.

Transmission line
Outdoor unit
Indoor unit
Wireless remote controller
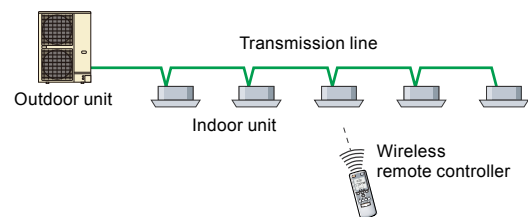
Note :   Timer setting from a wireless remote controller becomes invaild, if the indoor unit is connected with a wired or a simple remote controller.

■ FUNCTIONS

Display panel

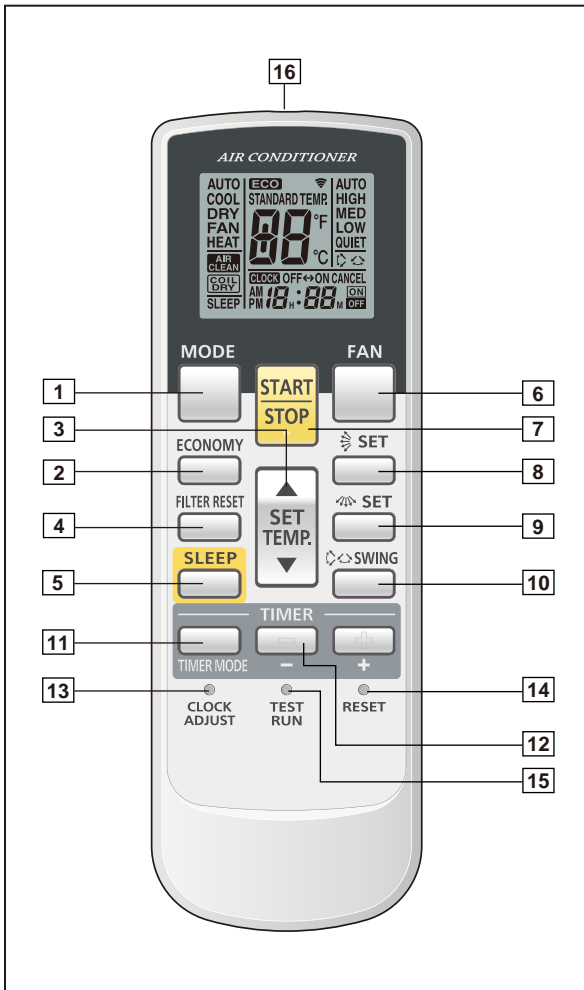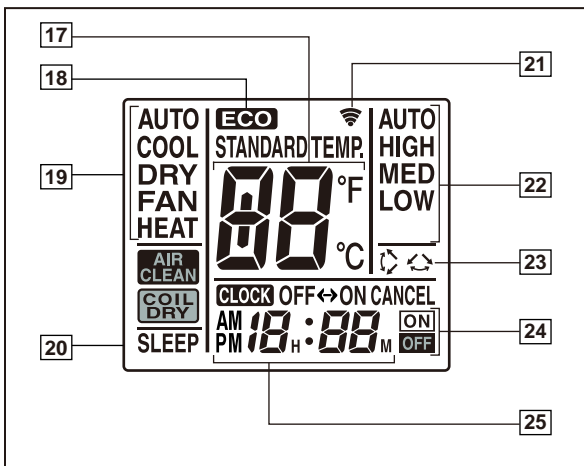| 1 | OPERATION MODE button |
	Selects the operating mode (AUTO, HEAT, FAN, COOL, DRY). /Start / end R.C. custom code change. (Max 4 types)
2	Economy button
3	Set temp. button (▲ / ▼)
	Set remote controller custom code buttons Sets the indoor temp./ Sets R.C. custom code.
4	Filter reset button
5	Sleep button
	Pressed to select sleep timer.
6	Fan button
	Selects the fan speed (AUTO, LOW, MED, HIGH).
7	START/STOP button
	Pressed to start and stop operation.
8	Set button (Vertical)
	Air flow direction vertical set button.
9	Set button (Horizontal)
	Air flow direction horizontal set button.
10	Swing button
	Air flow direction swing button.
11	Timer mode button
	Pressed to select the timer mode. (OFF TIMER, ON TIMER, PROGRAM TIMER, TIMER RESET)
12	Timer set (+ / -) button
	Sets the current time and on-off time.
13	Clock adjust button
	Sets the current time.
14	Reset button
	Used when replacing batteries.
15	Test run button
	Used when testing the air conditioner after installation.
16	Signal transmitter
17	Temperature set display
18	Economy display
19	Operating mode display
20	Sleep display
21	Transmit indicator
22	Fan speed display
23	Swing display
24	Timer mode display
25	Clock display

*1 : "AUTOⒶ" is not available for a heat pump model unless it is set up master indoor unit.

*2 : "FAN❀" is not available for a heat pump model

*3 : "HEAT☼" is not available for a cooling only model

CONTROL
SYSTEM

■ SYSTEM DIAGRAM

Signal receiver window

Signal transmitter
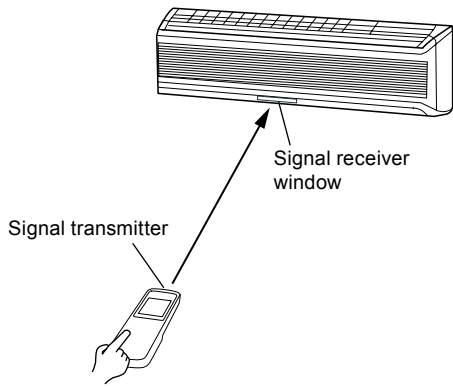
- Control signal might not be recognized in following cases:
  (i) A curtain or a wall, etc. exists between transmitter and receiver.
  (ii) There is an instant-start type (inverter type, etc.) fluorescent lamp in the room.

- Air conditioner might not work correctly when strong light hits the signal receiver window. Shut off the direct sunlight and also make illuminator far away from the receiver window.

■ DIMENSIONS

(Unit : mm)
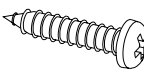
● Controller
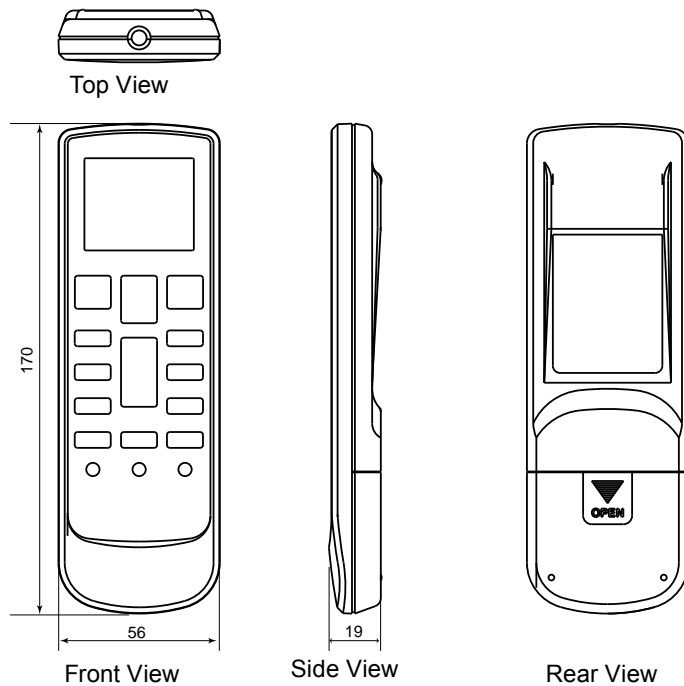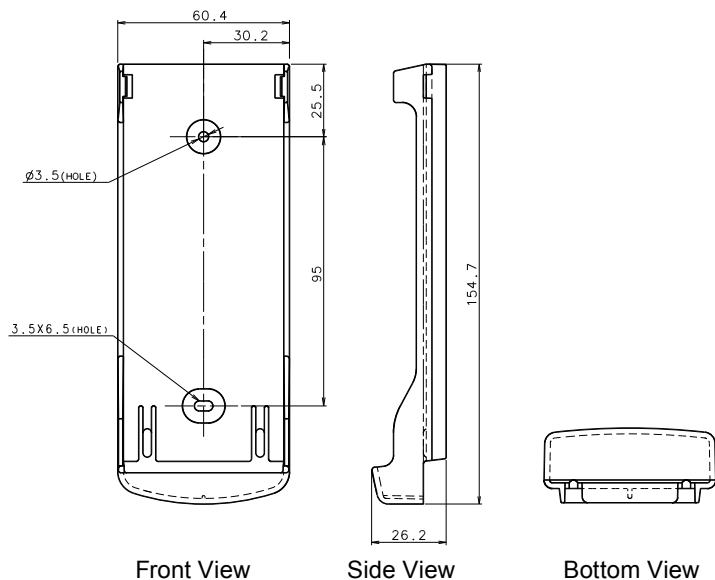
Top View

170

56

Front View

19

Side View

OPEN

Rear View

● Holder

60.4

30.2

25.5

Ø3.5(HOLE)

95

3.5X6.5(HOLE)

154.7

Front View

26.2

Side View

Bottom View

■ PACKING LIST

Name and shape		Quantity	Application
Installation manual		1	
Operating manual		1	
Remote controller holder		1	Use as remote controller holder
Screw (M3 x 12mm)		2	For remote controller holder installation
Battery [1.5V (R03 / AAA)]		2	For remote controller

■ SPECIFICATIONS

Model name	UTY - LNH✳
Dimensions [H x W x D] (mm)	170 x 56 x 19
Weight (g)	85 (w/o batteries)

2-9. IR RECEIVER UNIT (for ALL DUCT TYPE)

■ MODELS : UTB - ✳WB, UTB - ✳WC

■ FEATURES

Duct type indoor unit can be controlled with wireless remote controller if the IR receiver unit is used.

■ FUNCTIONS

OPERATION LAMP
TIMER LAMP

MANUAL AUTO
SIGNAL RECEIVER

■ SYSTEM DIAGRAM

● Attachment range

$L^{✳1)}$

$L^{✳1)}$

✳1) Connection cable length L
Cable A (standard accessory) : 5 m
Cable C (Optional parts)   : 10 m

● Signal angle

120°

5m

120°

5m

■ ELECTRICAL WIRING

Indoor unit control box

PCB

Connected to PCB *2

Connection cable (L = 0.15m) ...Standard accessory *1

Connected to Connection cable

Connection cable A (L = 5m)...Standard accessory
Connection cable C (L = 10m)...Optional service parts

60mm x 120mm hole

Connected to IR Receiver unit

IR Receiver unit
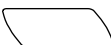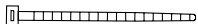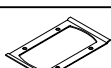
Connection cable to use by a model type is different, refer to the following.

Model type	Compact Duct Low Static Pressure Duct Duct, High Static Pressure Duct	Slim Duct
*1 Connection cable	Connection cable B	Connection cable D
*2 Connected to PCB	CN13	CN18

■ DIMENSIONS

(Unit : mm)

90

145

Front View

8.5 11.5 18.5

Side View

13.6 57.4 13.6
7.2 7.2
22.9
57.6
60
118.4
17
83.5
72.4

Rear View
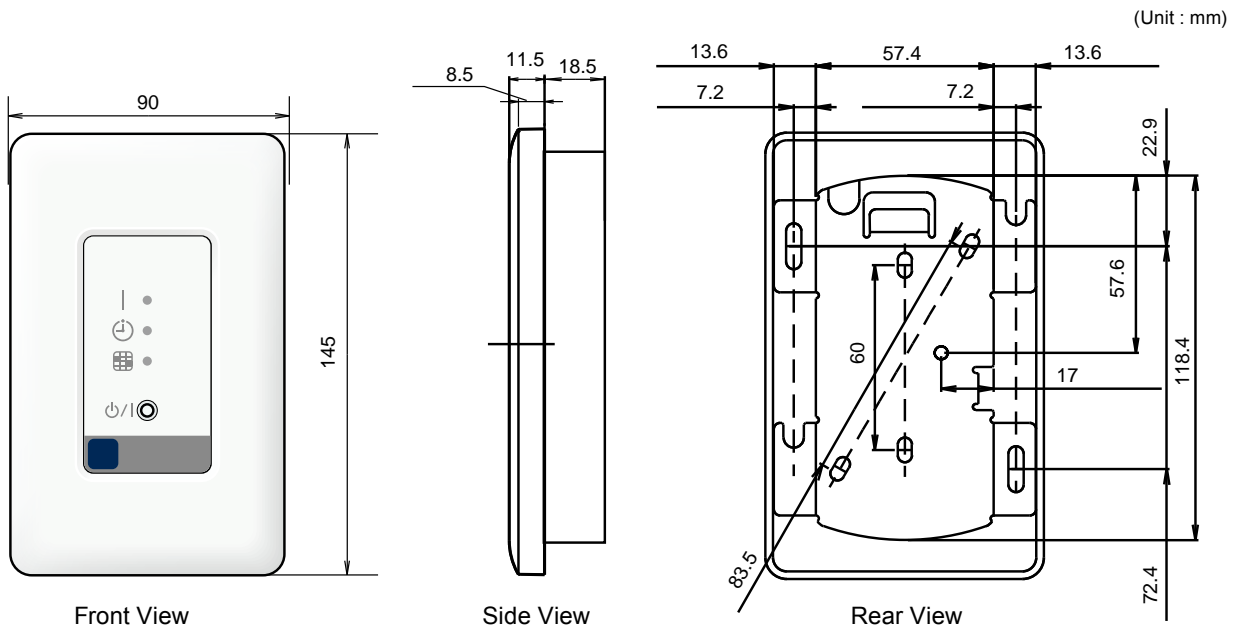
■ PACKING LIST

Name and shape	Quantity	Application
Installation manual	1	
Cover	1	For receiver unit
Insulation	1	For receiver unit
Binder	Small:1 Medium:1	For receiver unit
Screw (M4 x 20mm)	2	For installing receiver unit to wall, etc.
Screw (M4 x 12mm)	1	For attaching the hook metal to the holder cover
Screw (M4 x 10mm)	2	For attaching the hook metal to the indoor unit
Connection cable A (5m)	1	For connecting PCB of indoor unit to receiver unit
Connection cable B (0.15m)	1	For Compact Duct, Low Static Pressure Duct, Duct, and High Static Pressure Duct type
Connection cable D (0.15m)	1	For Slim Duct type
Hook metal	1	For installing receiver unit to indoor unit
Bracket (cover)	1	For receiver unit

■ SPECIFICATIONS

Model name	UTB - ∗WB, UTB - ∗WC
Dimensions [H x W x D] (mm)	145 x 90 x 30
Weight (g)	150

■ OPTIONAL SERVICE PARTS

Please use the parts number shown below to order the cable from your sales representative.

Select shielded type conncetion cable in accordance with the standard of the country.

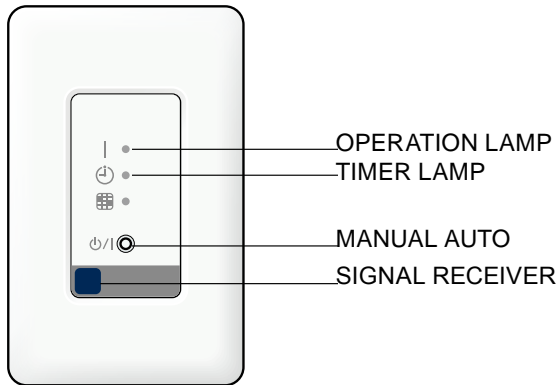| Name and shape	Type	Parts No.
Connection cable C (10m)	Non-shielded	9378143012
	Shielded	9378143036

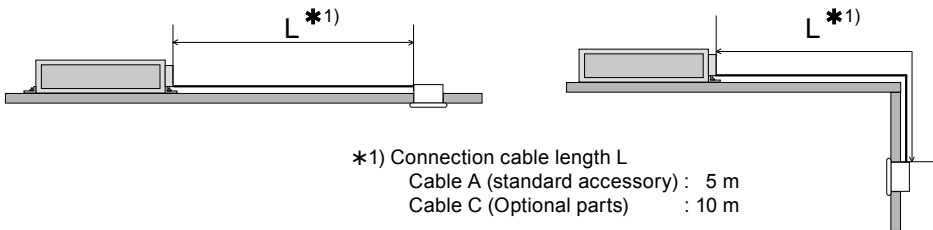# 2-10. IR RECEIVER UNIT (for CASSETTE TYPE)

■ MODEL : UTY - LRH＊B1

■ FEATURES

Cassette type indoor unit can be controlled with wireless remote controller if the IR receiver unit is used.
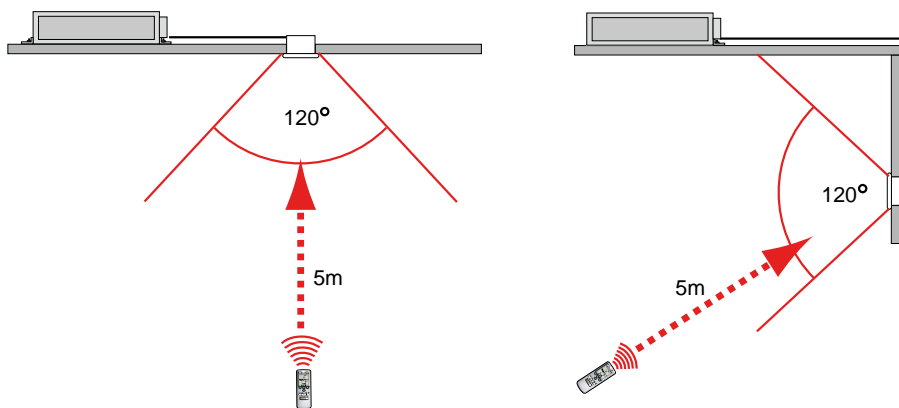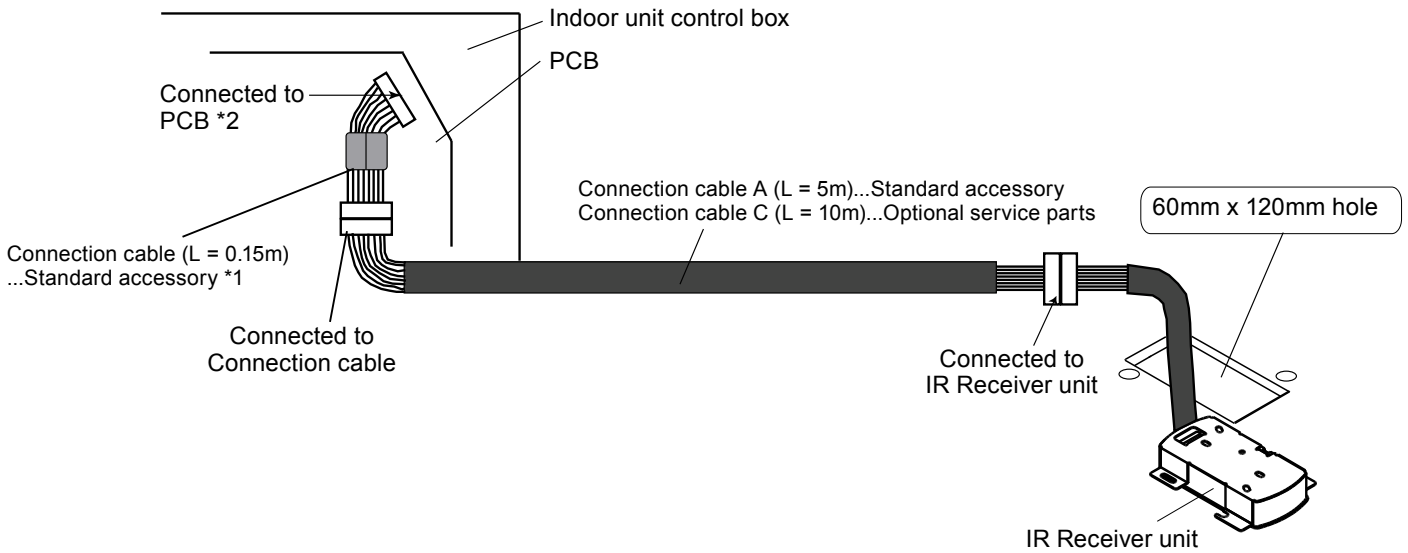
■ FUNCTIONS

Filter lamp (Red)
Timer lamp (Orange)
Operation lamp (Green)
Manual auto
Signal receiver

■ ELECTRICAL WIRING

Indoor unit (Cassette type)

Connected to CN18 of PCB
Wiring hole
Wire from IR Receiver unit

IR Receiver unit

■ DIMENSIONS

(Unit : mm)

Front View

193.9

193.9

Side View

31.2
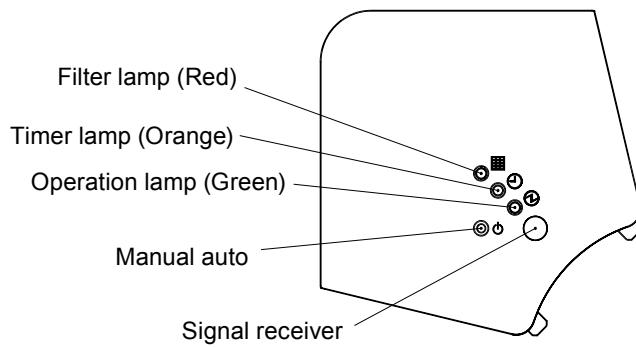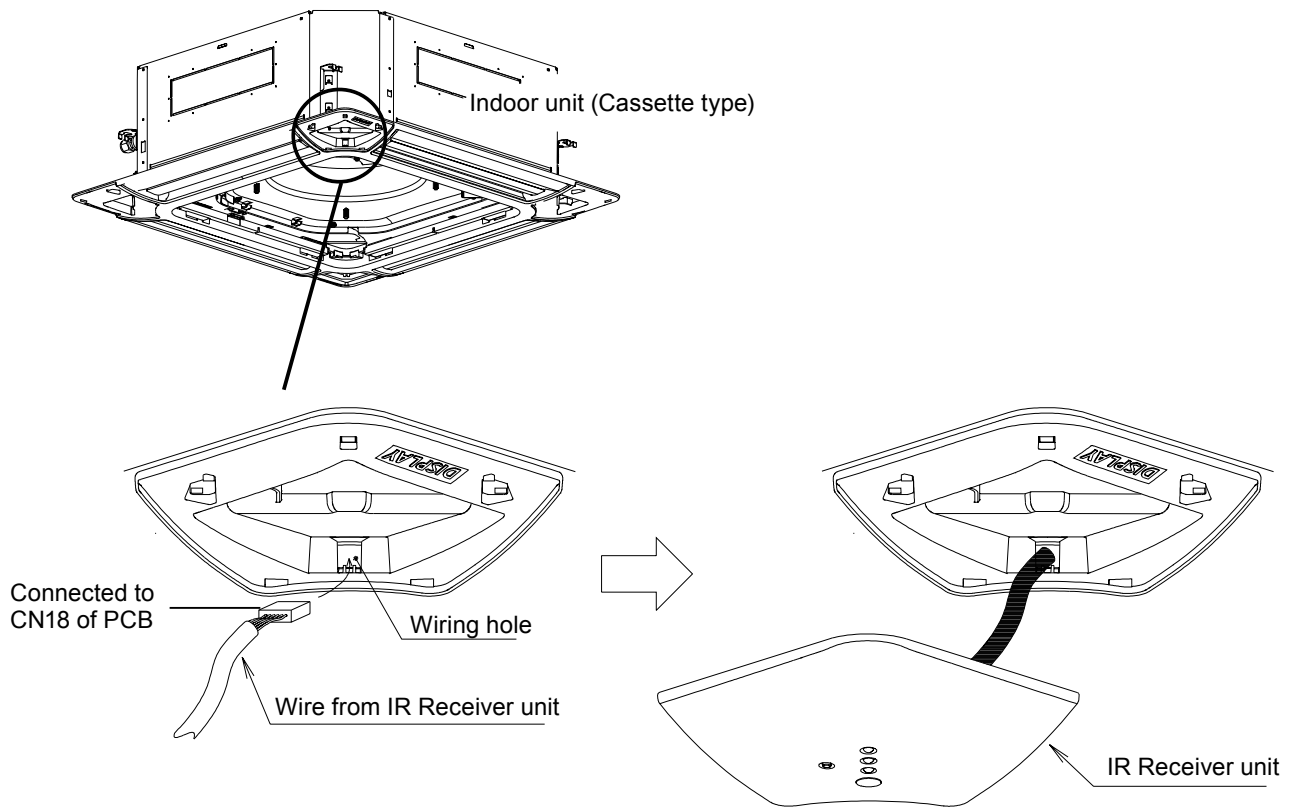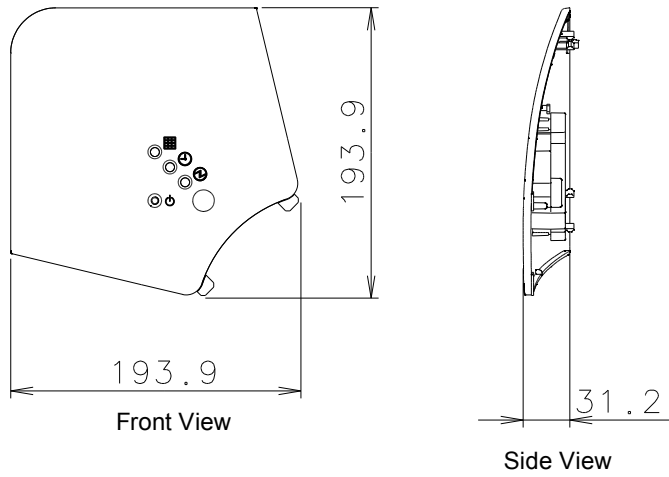
■ PACKING LIST

Name and shape	Quantity	Application
Installation manual	1	
Strap	1	Prevent receiver kit from falling down

■ SPECIFICATIONS

Model name	UTY - LRH∗B1
Dimensions [H x W x D] (mm)	193.9 x 193.9 x 31.2
Weight (g)	140

2-11. REMOTE SENSOR UNIT

■ MODEL : UTD - RS100
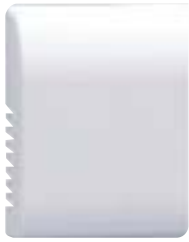
■ FEATURES

New amenity space can be offered by installing the Remote sensor.

■ ELECTRICAL WIRING

- Remove the screws from the remote sensor, and remove the cover.
- Connect the cable to the remote sensor as shown below.
- Ensure that the wires do not contact each other.

To indoor unit

Cable

Remote sensor

Shield wire
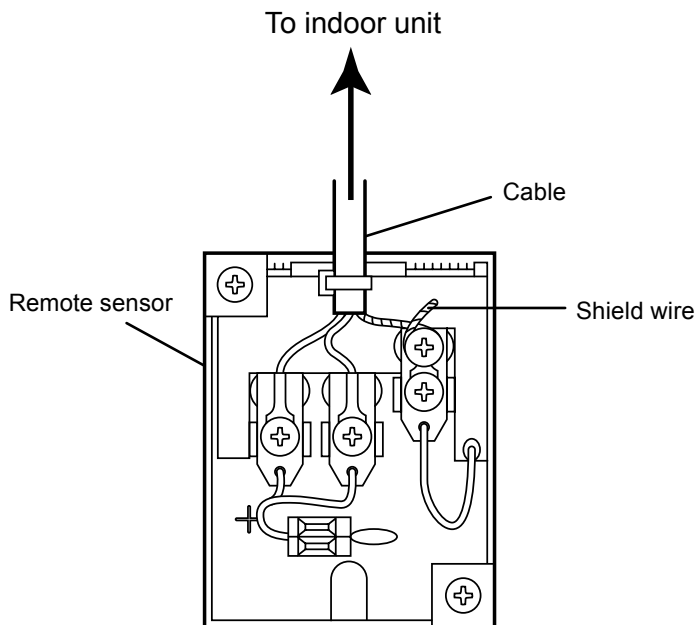
■ INSTALLATION

● When the cable is attached to the wall

- Remove the material covering the wiring penetration (thin material) in the cover of the sensor unit with a pair of cutters. The cable passes through this hole.
- Now the remote sensor on the wall using the screws.

Screw (big)

40

Unit : mm

55

Mounting hole dimensions
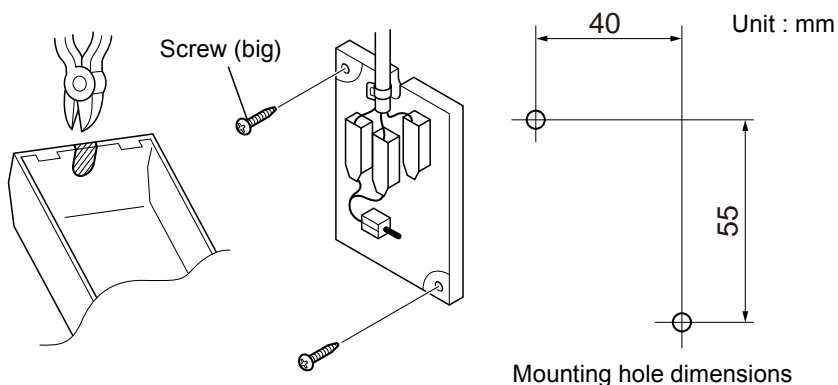
● When the cable is buried in the wall

- Remove the material (thinner than the surrounding material) in the wiring hole in the remote sensor using a pair of cutters.
- Drill a hole in the wall for the cable.
- Seal the area around the cable penetration with putty.

Screw (big)

20 20   Unit : mm

ø6 - ø10

1

55

Mounting hole dimensions
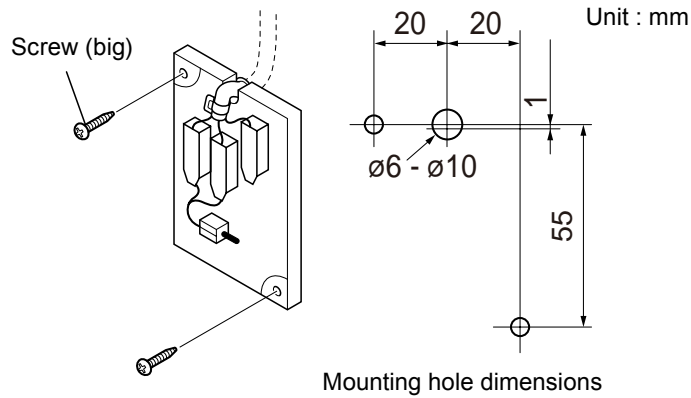
● Finish

- Fit the cover on the remote sensor and screw it in place.

■ DIMENSIONS

70.2

55.2
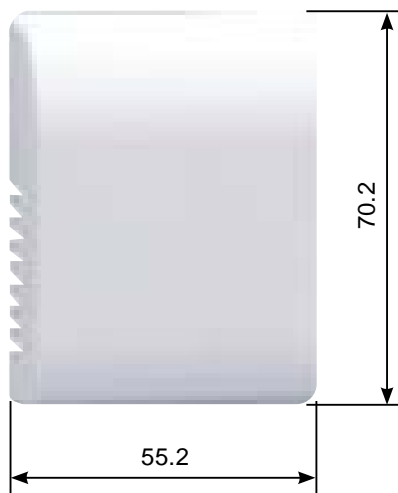
■ PACKING LIST

Name and shape		Quantity	Application
Installation manual		1	
Cable (10m)		1	
Screw (M4 x 16mm)		2	
Screw (M4 x 10mm)		2	
Cord clamp		1	

2-12. GROUP CONTROL METHOD

■ REMOTE CONTROLLER GROUP

Wired, Simple and Wireless Remote Controllers can be used jointly in the following combinations.

Example of combination for "Remote controller group"
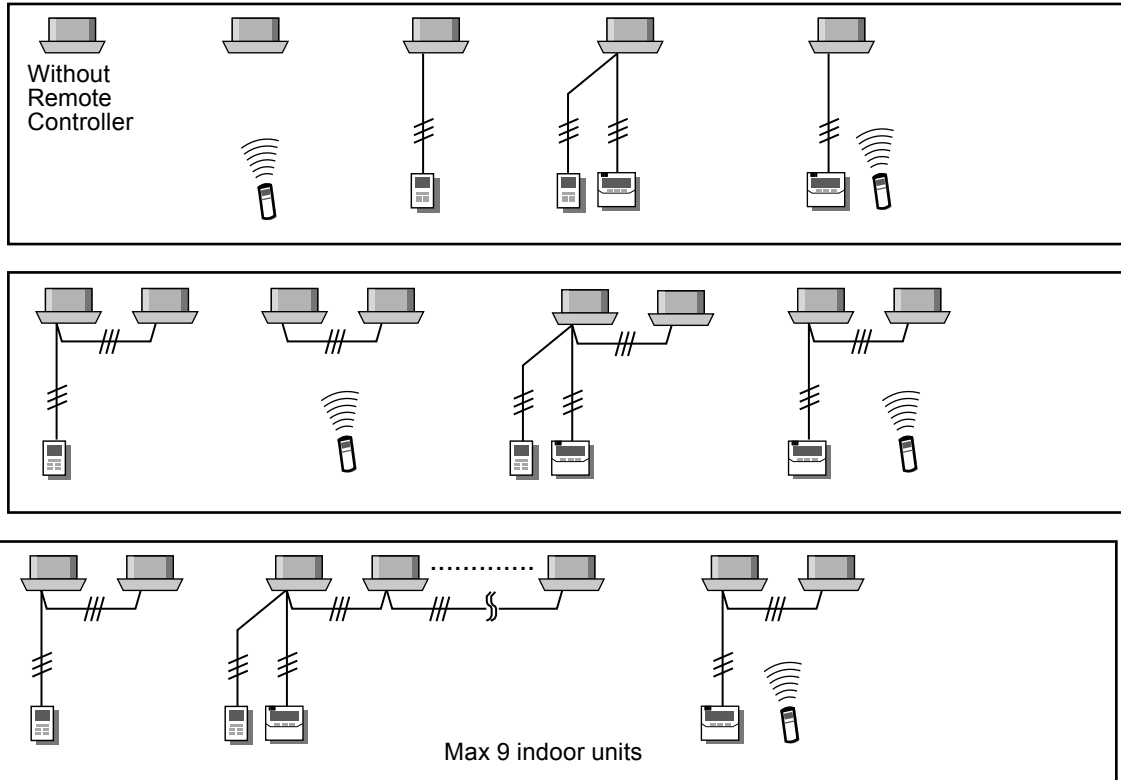
Connectable indoor unit : 1-9
Connectable remote controller : 0 - 2

● **Note**

    1. Indoor units in same remote controller group will be same operation.

    2. "Remote controller group" spanning the refrigerant system is not allowed.
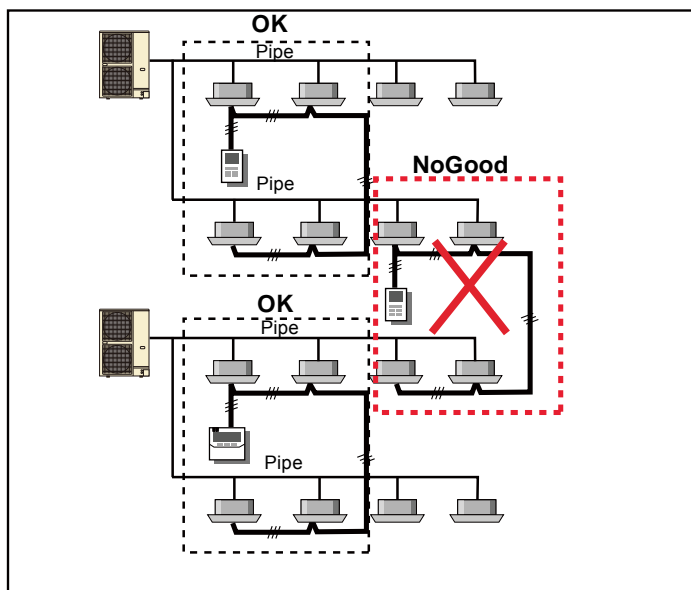
    3. When using 2 remote controller.

● Last command is priority.   (operation mode might be fixed by system operation.)

● Timer setting function become invalid from slave remote controller or Wireless Remote Controller.

■ GROUP

This function is used when operating a multiple number of remote controller group at a time from the System Controller or Touch Panel Controller or Central Remote Controller.

Example of "Group"

Refrigerant system 1

Refrigerant system 2

"Group" is possible with only one indoor unit

Overlapped "Group" is possible

A

B

C
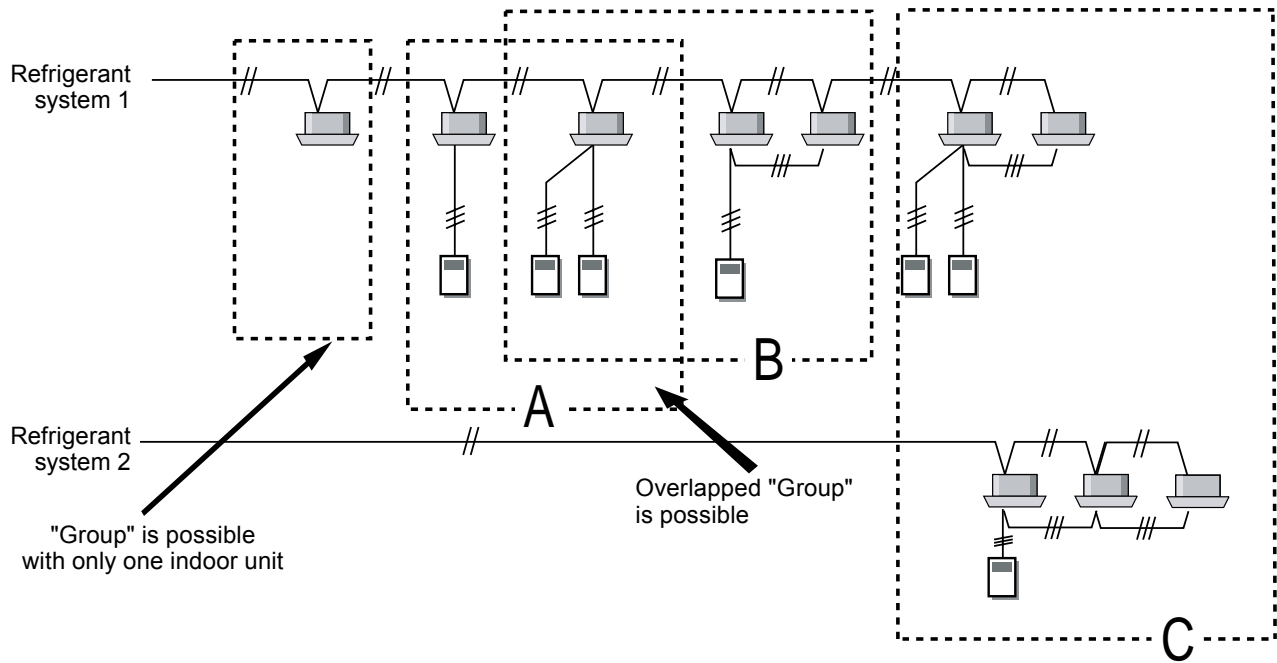
● Operation of either A group or B group is possible.
● Simultaneous operation of A group and B group is possible. (Last setting has priority)
● As shown in drawing "C","Group" spanning the refrigerant systems is possible.
● System Controller can make each group title.

2-13. COMPARISON TABLE OF CONTROLLERS

■ LIST OF CONTROLLER FUNCTION

Item	System Controller (software)	Touch Panel Controller	Central Remote Controller	Group Remote Controller	Wired Remote Controller	Simple Remote Controller	Simple [1] Remote Controller	Wireless Remote Controller
Model	UTY-APGX	UTY-DTG*	UTY-DCG*	UTY-CGG*	UTY-RNK*	UTY-RSK*	UTY-RHK*	UTY-LNH*
Max. controllable remote controller groups	1600	400	100	8	1	1	1	1
Max. controllable indoor units	1600	400	100	18 *3	9 *3	9 *3	9 *3	9 *3
Max. controllable groups	1600	400	16	-	-	-	-	-
Air conditioning control function								
Start/Stop	●	●	●	●	●	●	●	●
Operation mode setting	●	●	●	●	●	●	-	●
Fan speed setting	●	●	●	●	●	●	●	●
Room temp. setting	●	●	●	●	●	●	●	●
Room temp. set point limitation	●	●	●	-	-	-	-	-
Test operation	-	●	●	-	●	●	-	●
Up / down air direction flap setting	●	●	●	-	●	-	-	●
Right / left air direction flap setting	●	●	●	-	●	-	-	●
Group setting	●	●	●	-	-	-	-	-
RC prohibition	●	●	●	-	-	-	-	-
Anti freeze setting	●	●	●	-	-	-	-	-
Economy mode setting	●	●	●	-	●	-	-	●
Display								
Failure	●	●	●	●	●	●	●	-
Defrosting	●	●	●	-	●	●	●	-
Current time	●	●	●	●	●	-	-	●
Day of week	●	●	-	●	●	-	-	-
RC prohibition	●	●	●	●	●	●	●	-
Cooling / heating priority	●	●	●	●	●	●	●	-
Address display	●	●	●	●	●	●	●	-
Timer								
System schedule timer	●	●	-	-	-	-	-	-
System schedule timer — On / Off per day	72	20	-	-	-	-	-	-
System schedule timer — On / Off per week	504	140	-	-	-	-	-	-
Weekly timer	-	-	●	●	●	-	-	-
Weekly timer — On / Off per day	-	-	20	4	4	-	-	-
Weekly timer — On / Off per week	-	-	140	28	28	-	-	-
On / Off timer	-	-	-	-	●	-	-	●
Sleep timer	-	-	-	-	-	-	-	●
Program timer	-	-	-	-	-	-	-	●
Day off	●	●	●	-	●	-	-	-
Min. unit of timer setting (Minutes)	10	10	10	10	30	-	-	5
Control								
Status monitoring system	●	●	●	-	-	-	-	-
Electricity charge calculation	●	-	-	-	-	-	-	-
Error history	●	●	●	●	●	●	●	-
Emergency stop	-	●*2	●*2	-	-	-	-	-
Control via internet	●	-	-	-	-	-	-	-
E-mail notifification for malfunction	●	-	-	-	-	-	-	-

*1: "Operation mode" setting is not available for this model.
*2: This function is available only through external input control.
*3: In the case of connection constitution for only J-II.

3. ADAPTOR / CONVERTOR UNITS

The following types of convertors and adaptors are available.

- **Network Convertor (UTY-VGGX)**

    1. For connecting single split type system.
       (A change of DIP switch setting is necessary)
    2. For connecting group remote controller(s).

- **Network Convertor for LONWORKS® (UTY-VLGX)**

    For connection between VRF network system and a LONWORKS® open network for management of small to medium-sized BMS.

- **BACnet Gateway (UTY-ABGX : Software)**

    The central control of maximum 1600 indoor units can be realized by connecting the VRF network system to the BACnet, a global standard for open networks.

- **Signal Amplifier (UTY-VSGX)**

    When the total length of transmission line exceeds 500m or the number of units exceeds 64, Signal amplifier will be necessary.

- **External Switch Controller (UTY-TEKX)**

    Air conditioner switching can be controlled by connecting other sensor switches.

3-1. NETWORK CONVERTOR

■ MODEL : UTY - VGGX

1. For connecting single split type system

[A change of DIP switch setting is necessary]

■ FEATURES

- With this network convertor, single split type, big multi type and J series air conditioners can be controlled by Touch panel controller, System controller in VRF network system or by wired remote controller that is connected to the Network convertor.
- Start/Stop, operation mode, temperature setting, fan speed, etc. can be done with these controllers.
- One Network convertor can be connected and controlled up to 16 indoor units.
- 2 wired remote controllers are possible for one network convertor.
- Up to 100 network convertors can be connected in one VRF network system. (One Network convertor is regarded as one refrigerant system. The total refrigerant systems in one VRF network system must be within 100.)

■ FUNCTIONS

- Start/Stop ●Temperature control ●Operation mode ●Timer setting
- Fan control ●Central control (Lock the remote controller functions)

■ SYSTEM DIAGRAM
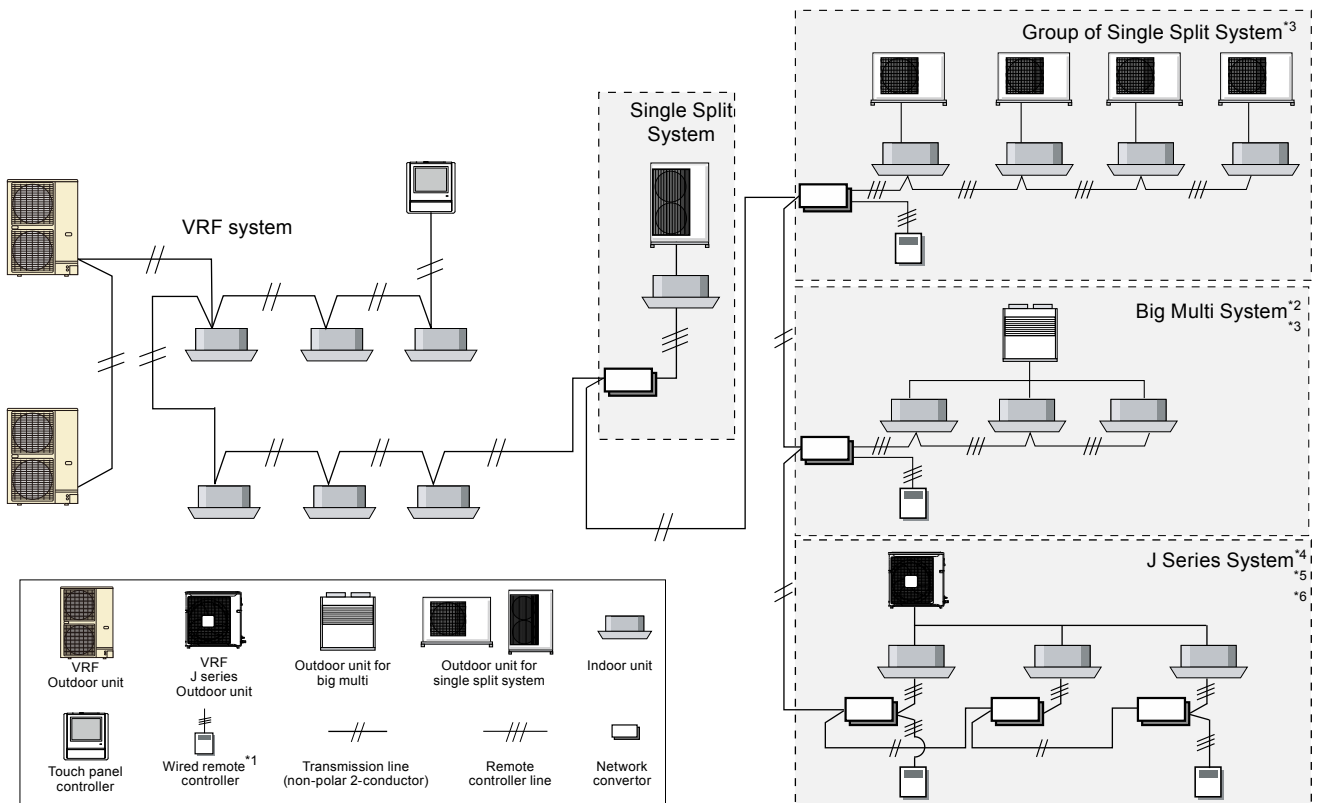
*1 : When connecting an indoor unit that has an 'L' control method, connect the remote controller for VRF to control from a wired remote controller. Do not connect the wired remote controller included with the indoor unit.

*2 : Connect one big multi system to one network convertor. Don't connect two big multi system, or one big multi system and one single split system to one network convertor.

*3 : All indoor units connected to a network convertor are operating under same status.

*4 : For controlling J series system, same operation mode should be used in same refrigerant system. When indoor unit is set in different operation mode via central control unit, indoor unit might be in stand by mode.

*5 : For using J series heat pump system, "AUTO" and "FAN" mode should not be used.

*6 : Network convertor is necessary for each indoor unit.

■ ELECTRICAL WIRING
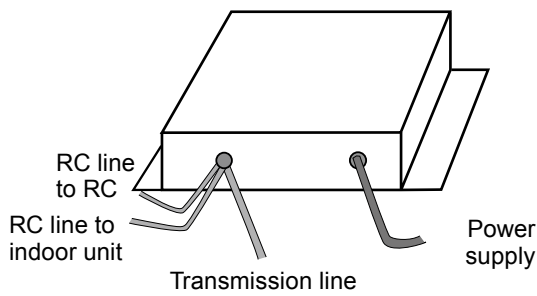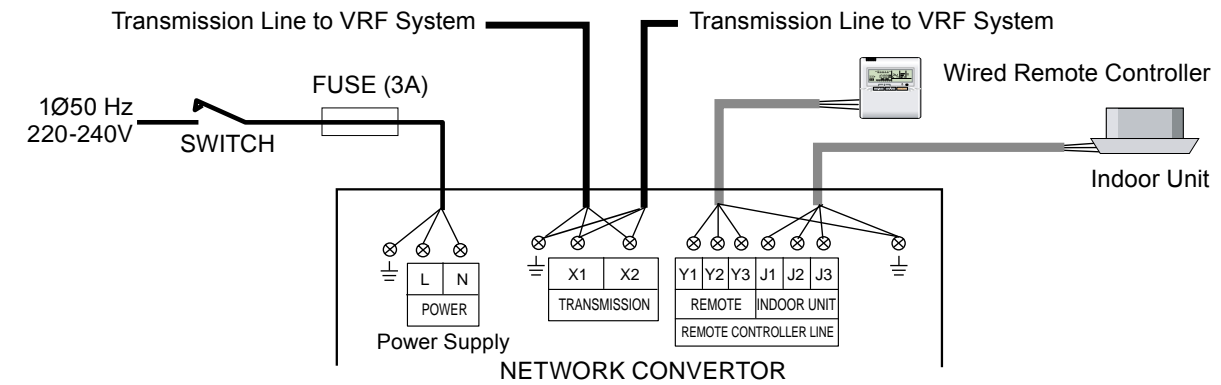
Transmission Line to VRF System   Transmission Line to VRF System

Wired Remote Controller

1Ø50 Hz
220-240V   SWITCH   FUSE (3A)   Indoor Unit

L	N
POWER	

Power Supply

X1	X2	Y1	Y2	Y3	J1	J2	J3
TRANSMISSION		REMOTE			INDOOR UNIT		
		REMOTE CONTROLLER LINE					

NETWORK CONVERTOR

RC line
to RC

RC line to
indoor unit   Transmission line   Power
supply

Note :
● Do not bind the power cable and remote controller cable to avoid an erroneous operation.
● Use shield cable for transmission line and remote controller line. The shield metal should be grounded.
● Use ground wire to ground the network convertor.

■ APPLICABLE MODELS

VRF J series		○
	Wireless Remote Controller model	✕
Big Multi type	Simultanuous model	○
	Individual model	○
Single Split type		○
	Wired Remote Controller model	○
	Wireless Remote Controller model	✕
Window type		✕

● The following indoor unit models may be controlled from a network convertor. However, the indoor unit cannot be controlled if a wired remote controller cannot be connected to it.

1) When 4th letter is an alphabet, indoor unit models using the "N" or "U" Series name.

A **U** **Y** **A** **2** **4** **L** **A** **T** **N**
Type — Desti-nation — Model — Model code — Function — Model change code — Made in origen — **Series name**

2) When 4th letter is a figure, indoor units models using the "L", "U" or "F" Control method.

A **U** **Y** **2** **5** **T** **L** **A** **M** **A**
Type — Market region — Model code — Function — **Control method** (Remote control) — Model change code — Special method

● When connecting an indoor unit that has an "L" control method, connect the remote controller for VRF (UTB-*U*, UTB-*R* and UTB-*P*) to control from a wired remote controller. Do not connect the wired remote controller included with the indoor unit.

● As the network convertor is not compatible with "Flow direction setting" (except for wired remote controllers), "Anti-freeze", "Filter sign", "Set temperature 10-15°C' (except for models using the "U" control method), 'Room temperature detection location' (except for models using the "U" control method), 'Model name display', and 'Electricity charge calculation', control and display are not possible with the controller units.

● For the indoor units that have an "L" control method, attached remote controller having an RC number giving in the table below can be used only.

RC number	RC model
EZ-099DHSE-R, EZ-000DHSE-R, EZ-0001HSE-R, EZ-000GHSE-R, EZ-00004HSE-R, EZ-00005HSE-R, EZ-0015HSE-R, EZ-0019HSE-R, EZ-099DHSEFR, EZ-0001HSEFR, EZ-000DHSEFR, EZ-000GHSEFR, EZ-0015HSEFR	Weekly timer and heat pump model
EZ-0994HSE-R, EZ-000EHSE-R, EZ-0994HSEFR	Big multi and heat pump model
EZ-099CWSE-R, EZ-000AWSE-R, EZ-0001WSE-R, EZ-000FWSE-R, EZ-0012WSE-R, EZ-099CWSEFREZ-0001WSEFR, EZ-000AWSEFR	Weekly timer and cooling only model
EZ-09906WSE-R, EZ-000BWSE-R, EZ-09906WSEFR	Big multi and cooling only model

2. For connecting group remote controller(s)

■ FEATURES

- Up to a total of 16 network convertors, Central remote controller and Touch panel controller can be connected in one VRF network system.
- Four group remote controllers can be connected to one network convertor.
- Two refrigerant systems can be covered by one network convertor.

■ SYSTEM DIAGRAM
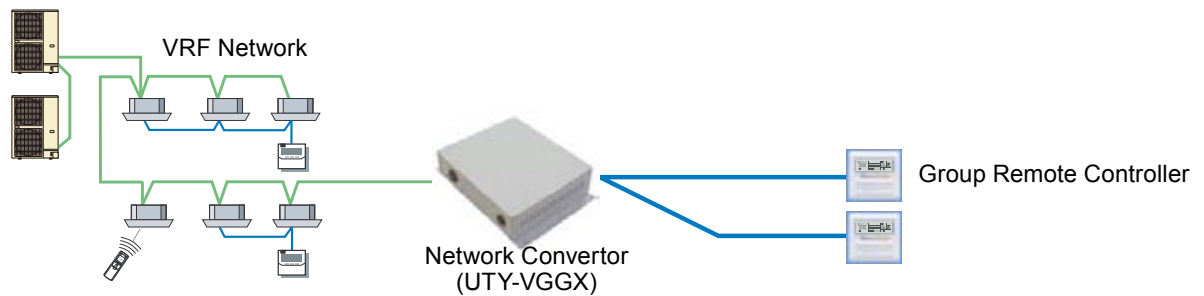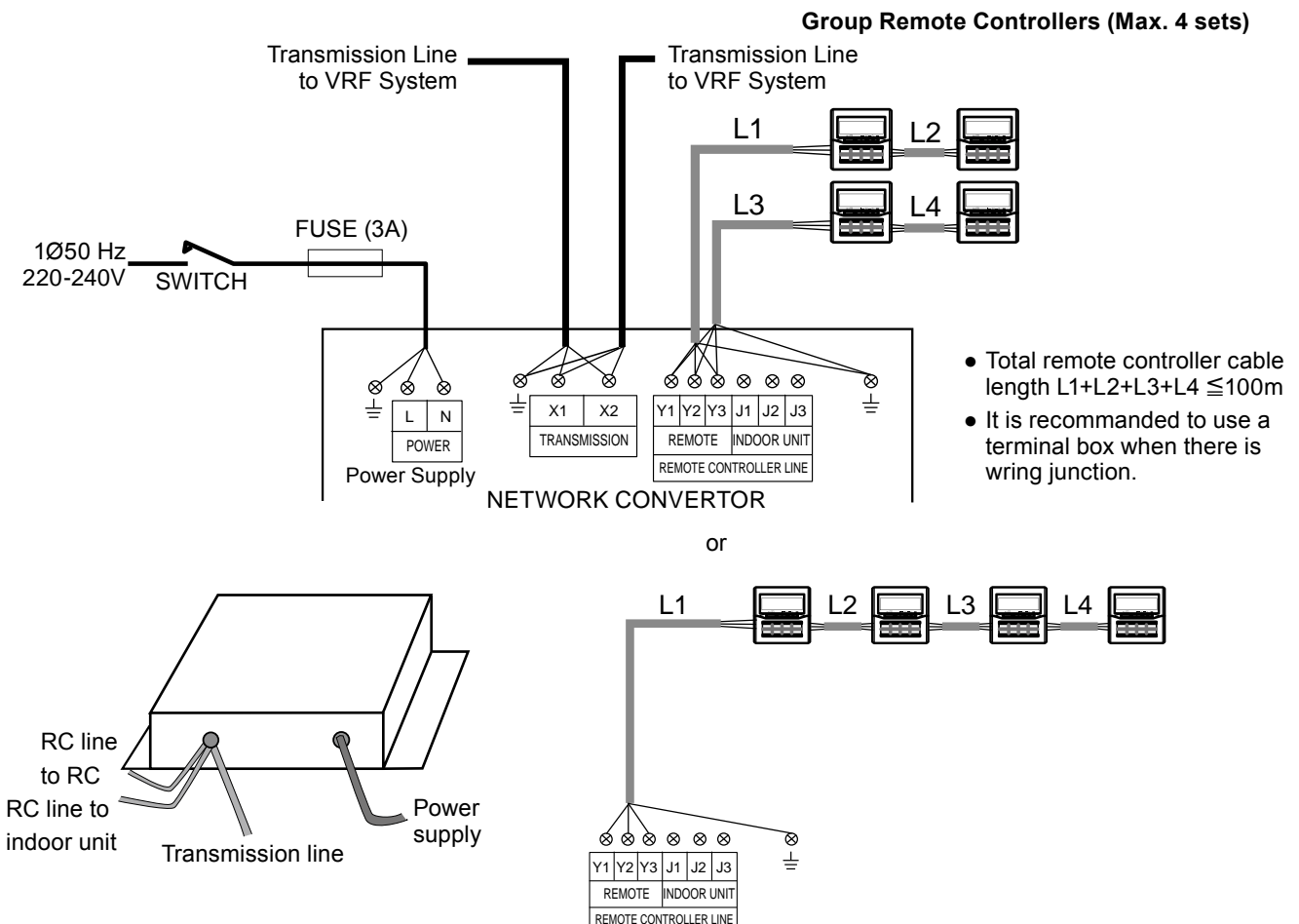
VRF Network

Network Convertor
(UTY-VGGX)

Group Remote Controller

■ ELECTRICAL WIRING

Group Remote Controllers (Max. 4 sets)

Transmission Line to VRF System

Transmission Line to VRF System

L1   L2

L3   L4

1Ø50 Hz 220-240V   SWITCH   FUSE (3A)

⊗	⊗	⊗
⏚	L	N
	POWER	

Power Supply

⊗	⊗	⊗
⏚	X1	X2
	TRANSMISSION	

⊗	⊗	⊗	⊗	⊗	⊗		⊗
Y1	Y2	Y3	J1	J2	J3		⏚
REMOTE			INDOOR UNIT				
REMOTE CONTROLLER LINE							

NETWORK CONVERTOR

- Total remote controller cable length L1+L2+L3+L4 ≦100m
- It is recommanded to use a terminal box when there is wring junction.

or

RC line to RC

RC line to indoor unit

Transmission line

Power supply

L1   L2   L3   L4

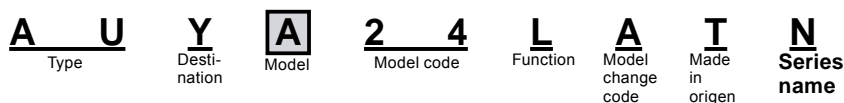| ⊗	⊗	⊗	⊗	⊗	⊗		⊗
Y1	Y2	Y3	J1	J2	J3		⏚
REMOTE			INDOOR UNIT				
REMOTE CONTROLLER LINE							

Note :

- Do not bind the power cable and remote controller cable to avoid an erroneous operation.
- Use shield cable for transmission line and remote controller line. The shield metal should be grounded.
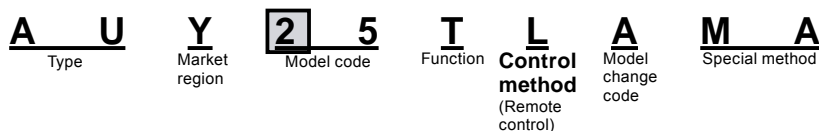- Use ground wire to ground the network convertor.

CONTROL SYSTEM
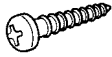
■ DIMENSIONS

(Unit : mm)

■ PACKING LIST

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

Name and shape		Quantity	Application
Installation manual		1	
Binder		4	For mounting the power supply cable, remote controller cable and transmission cable.
Screw (M4 x 20mm)		4	For mounting the network convertor.

■ WIRING SPECIFICATIONS

Use	Size		Wire type	Remarks
Power supply cable	Maximum	1.25mm^2	245 IEC 57 or equivalent	1 ø AC220 - 240 V 50/60Hz, 2 Wire + ground (Always ground the unit)
	Minimum	0.5mm^2		
Transmission cable	0.33mm^2 (22AWG)		LEVEL4 (NEMA) non-polar 2 core, twisted pair solid core Shielded	LONWORKS® compatible cable
Remote controller cable	0.33mm^2 (22AWG)		Polar 3 core	Use sheathed PVC cable or shielded cable in accordance with the regional cable standard.
External input / output cable	0.33mm^2 (22AWG)		Polar 2core, Twisted pair	Use shielded cable in accordance with the regional cable standard.
Fuse capacity	3A			

■ SPECIFICATIONS

Power supply		1ø AC220 - 240V 50/60Hz
Input Power (W)		6.5
Temperature(°C)	Operating	0 to 46
	Packaged	-10 to 60
Humidity (%)	Packaged	0 to 95 (RH) ; No condensation
Dimensions (H x W x D) (mm)		67 x 288 x 211
Weight (g)		1500

3-2. NETWORK CONVERTOR FOR LONWORKS®

■ MODEL : UTY - VLGX

■ FEATURES

- The convertor for connecting VRF network system to the BMS system built by LONWORKS® open network, for manage small to medium sized BMS and VRF network system.
- A maximum of 128 indoor units can be connected to one Network Convertor for LONWORKS®.
- VRF system can be centrally controlled or monitored from BMS via UTY-VLGX.
- A maximum of 4 Network Convertor for LONWORKS® can be connected to one BMS.

■ SYSTEM DIAGRAM

● Proper system diagram

Maximum 4 Network convertor for LONWORKS® (UTY-VLGX)

Network convertor for LONWORKS® (UTY-VLGX)

Maximum 100 outdoor units

Maximum 128 indoor units

General-purpose building control computer (LONWORKS® device)

LONWORKS® Network

VRF network system 1

Network convertor for LONWORKS® (UTY-VLGX)

Maximum 100 outdoor units

Maximum 128 indoor units

Lighting facilities

Security system

Automatic fire alarm interface

Ventilation system

VRF network system 2

VRF Outdoor unit | Indoor unit | VRF network | Router (Field supplied)

● Improper system diagram

● Example 1 (Not Good)

Network convertor for LonWorks® (UTY-VLGX)

Maximum 100 outdoor units

Maximum 128 indoor units

LonWorks® Network

VRF network system 1

Network convertor for LonWorks® (UTY-VLGX)

Maximum 100 outdoor units

Maximum 128 indoor units

VRF network system 2

● Example 2 (Not Good)

Network convertor for LonWorks® (UTY-VLGX)

Maximum 100 outdoor units

Maximum 128 indoor units

Maximum 128 indoor units

LonWorks® Network

Network convertor for LonWorks® (UTY-VLGX)

■ FUNCTIONS

● Indoor unit control

● Individual control

Commands from LONWORKS® Network are sent to the respective indoor units. (LONWORKS® Network → respective indoor units of VRF Network)

● Batch control

Commands from LONWORKS® Network are sent to all indoor units connected to VRF Network. (LONWORKS® Network → All indoor units of VRF Network)

● Indoor unit status monitoring

Indoor unit status is communicated to the LONWORKS® Network in the form of LON® Network variables. (LONWORKS® Network ← All indoor units of VRF Network)

■ CONTROL AND MONITORING ITEMS

Note: For detail information, please check the Interface Specification.

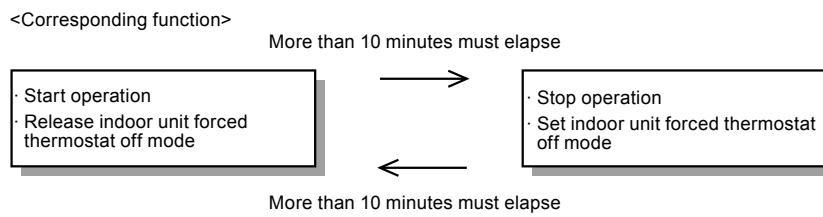| Item	Function	Description
Indoor Unit Control (Individual / Batch)	ON/OFF Command	Start / Stop operation
	Operation Mode Setting	Cooling / Heating / Auto / Fan / Dry
	Temperature Setting	Set room temperature
	Airflow Mode Setting	Set airflow
	Set Point Temperature Limit Setting	Set room temperature lower limit (for cooling mode) & room temperature upper limit (for heating mode)
	Thermostat Off setting	Thermostat off (Only one controller in VRF Network System can do this)
	Centrally Control (Filter Reset)	Prohibition of filter sign reset of remote controller
	Centrally Control (All Mode)	Prohibition of all mode of remote controller
	Centrally Control (Timer Mode)	Prohibition of timer mode of remote controller
	Centrally Control (Set Temperature Mode)	Prohibition of set temperature mode of remote controller
	Centrally Control (ON/OFF Mode)	Prohibition of ON/OFF mode of remote controller
	Centrally Control (ON Mode)	Prohibition of ON mode of remote controller
	Centrally Control (Operation Mode)	Prohibition of operation mode of remote controller
Indoor Unit Control (Individual)	Filter Sign Reset	Set filter sign reset command
	Antifreeze Setting	Set antifreeze command
	Energy Save Mode Setting	Set energy save command
Indoor Unit Control (Batch)	Emergency STOP Setting	Set Emergency STOP command
	Time Setting	Set time setting command (The controllers those are connected in VRF Network System are an object)
Indoor Unit Monitoring (Individual)	ON/OFF Status	ON / OFF status
	Operation Mode Setting Status	Heating / Cooling / Auto / Fan / Dry mode status
	Temperature Setting Status	Room set temperature status
	Airflow Mode Setting Status	Airflow mode status
	Set Point Temperature Limit Status	Room set temperature limit status
	Thermostat Off Setting Status	Thermostat off set value status
	Centrally Control (Filter Reset) Status	Remote controller filter reset prohibition status
	Centrally Control (All Mode) Status	Remote controller all mode prohibition status
	Centrally Control (Timer Mode) Status	Remote controller timer mode prohibition status
	Centrally Control (Set Temperature) Status	Remote controller set temp. prohibition status
	Centrally Control (ON/OFF) Status	Remote controller ON / OFF prohibition status
	Centrally Control (ON) Status	Remote controller ON prohibition status
	Centrally Control (Operation) Status	Remote controller operation prohibition status
	Antifreeze Setting Status	Antifreeze set status
	Energy Save Mode Setting Status	Energy save mode set status
	Filter Sign Reset Status	Filter sign reset status
	Room Temperature Status	Room temperature status
	Alarm Code Status	Only one Alarm Code status can be monitored
	Operation Mode restriction Status	Restriction item (*1) can be monitored
Indoor Unit Monitoring (Batch)	Maintenance Mode Status	Maintenance status
	Emergency STOP Setting Status	Emergency STOP setting status
Outdoor Unit Monitoring (Individual)	Alarm Code Status	Alarm code status
Convertor Unit Monitoring (Individual)	Alarm Code Status	Alarm code status

*1: All operation setting, Timer setting, Room temperature setting, Operation mode setting, ON/OFF operation, Filter reset operation, On operation setting.

＊ To protect the compressor of the outdoor unit, please carefully read and understand the following cautions that may affect the operation of the compressor before executing the setting.

・When performing periodical settings like schedule settings for the following functions, perform the setting to all the indoor units in the same refrigerant system simultaneously, conforming to the timing restriction described below.

<Corresponding function>

More than 10 minutes must elapse

· Start operation
· Release indoor unit forced
  thermostat off mode
	→	· Stop operation
		· Set indoor unit forced thermostat
		  off mode

More than 10 minutes must elapse

＊ Forced thermostat OFF instruction

・Only one equipment can send these instructions for each refrigerant system.

・When these instructions are sent by multiple equipments, the system may not respond asinstructed or may malfunction.

■ SPECIFICATIONS

● Operating environmental specifications

Power supply		1ø AC220 - 240V 50/60Hz
Input Power (W)		4.5
Temperature(°C)	Operating	0 to 46
	Packaged	-10 to 60
Humidity (%)	Packaged	0 to 95 (RH) ; No condensation
Dimensions (H x W x D) (mm)		67 x 288 x 211
Weight (g)		1500

● Transmission specifications

LONWORKS® network	
Transmission speed	78kbps
Transceiver	FT-X1 (Echelon® Corporation)
Transmission way form	Free topology
Cable	Twisted pair cable (shield)
	22AWG Equivalent
Network connector	One terminal
Terminal resistor	None attachment (It attaches at the terminal of a network)

■ PACKING LIST

Name and shape	Quantity	Application
Installation manual	1	Use during installation.
Binder	3	For mounting the power supply cable and transmission cable.
Screw (M4 x 20mm)	4	For mounting the network convertor.
CD-ROM	1	Includes the software and manuals of Tool for network convertor.
Connector cable	1	For initial setting.

■ PERSONAL COMPUTER SPECIFICATIONS

	Tool for Network Convertor (UTY-VLGX)
CPU	At compatible machine that runs Microsoft® Windows®
Memory	1GB(Vista & 7), 128MB(XP) or more
Display	1024 x 768 dots or more, High color (16bit) or more
Interface	Serial(RS232C) port (x1) *Please be sure to use "COM1"
Operating System	Microsoft® Windows® XP Professional (English version/Chinese version) Service pack 3 or later Microsoft® Windows® Vista Home Premium (English version/Chinese version) Service pack 1 or later Microsoft® Windows® 7 Professional (English version/Chinese version) * 64-bit version of Windows® are not supported.
Required Hardware	CD-ROM drive
Required Software	Adobe® Reader 9.0 or later

■ DIMENSIONS

(Unit : mm)

Ø15 GROMMET

91   89.5   Ø24 GROMMET

29

2 - Ø5
For M4x20L screws

95 (Hole pitch)

95 (Hole pitch)

211

4 - Ø5
For M4x20L
screws

241.6
272 (Hole pitch)
288

67

■ ELECTRICAL WIRING

General purpose building control computer
(LONWORKS® Device)

TRANSMISSION
CABLE

Router
(Field supplied)

1Φ 50/60Hz
220-240V

SWITCH

FUSE (3A)

POWER SUPPLY CABLE

INDOOR UNIT

⚠ NO HIGH VOLTAGE

X1 X2   Y1 Y2 Y3
TRANSMISSION   REMOTE CONTROL

NETWORK CONVERTOR

POWER
SUPPLY

L   N

⚠ NO HIGH VOLTAGE
TRANSMISSION

LON   VRF

B1 B2   X1 X2

TRANSMISSION CABLE

OUTDOOR UNIT

TRANSMISSION   ⚠   E

X1 X2   Z1 Z2   H1 H2

MASTER
OR
SLAVE
OUTDOOR
UNIT

INDOOR UNIT

⚠ NO HIGH VOLTAGE

X1 X2   Y1 Y2 Y3
TRANSMISSION   REMOTE CONTROL

Network convertor

Transmission cable to
LONWORKS network

Power supply

Transmission cable to
VRF network

Note :
● Do not bind the power cable and transmission cable to avoid an erroneous operation.
● Use shield cable for transmission cable. The shield metal should be grounded.
● Do not forget to ground the Network Convertor.

■ WIRING SPECIFICATIONS

Use	Size		Wire type	Remarks
Power supply cable	Maximum	1.25mm^2	245 IEC 57 or equivalent	1 ø AC220 - 240 V 50/60Hz, 2 Wire + ground (Always ground the unit)
	Minimum	0.5mm^2		
Transmission cable	0.33mm^2 (22AWG)		LEVEL4 (NEMA) non-polar 2 core, twisted pair solid core Shielded	LONWORKS® compatible cable
Fuse capacity	3A			

＊Always ground the unit

■ TOTAL SYSTEM CONFIGURATION LAYOUT

Making XIF of Network Convertor using a Tool for network convertor (Software) provided by Fujitsu General.
(Job is done by Network Integrator)

Binding VRF with BMS
(By Network Integrator)
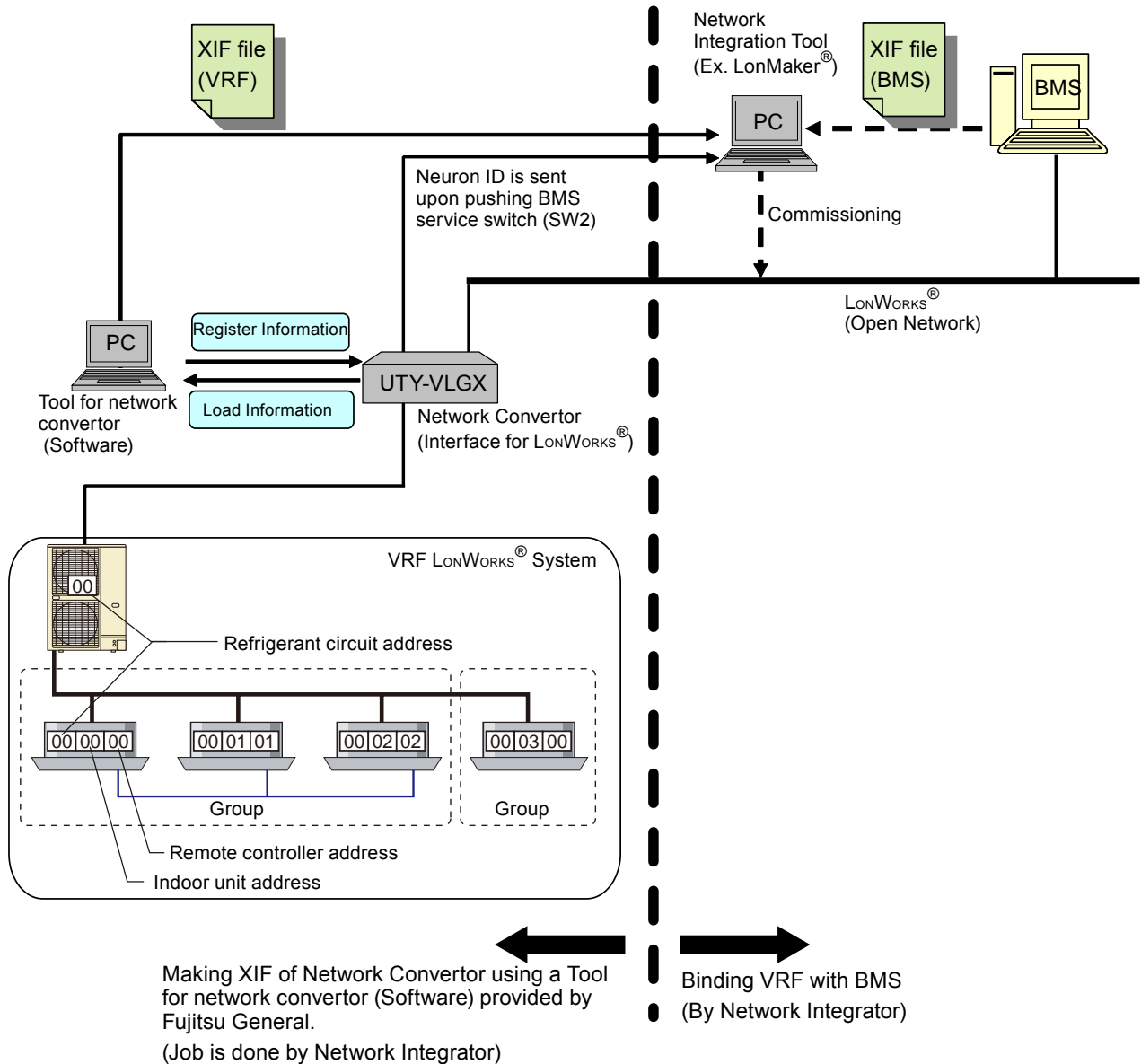
■ PCB FOR NETWORK CONVERTOR (UTY-VLGX)
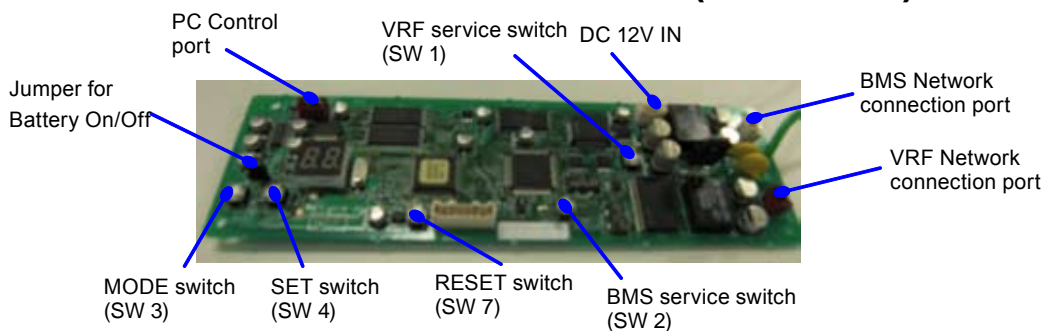
■ PROCEDURE IN BRIEF FOR MAKING XIF & REGISTER DATA TO NETWORK CONVERTOR (UTY-VLGX)

Note: For detail information, please check the Application Manual which is included inside packaged CD-ROM.

Following are the work item during on line operation. However, XIF making is also possible during off line operation.

STEP 1: Connect the PC and Network Convertor (UTY-VLGX) .

Connection will be done by the connector cable provided as an accessory item of UTY-VLGX.

STEP 2: Install Tool for Network Convertor (software) for UTY-VLGX in PC.

Tool for Network Convertor is the accessory item of UTY-VLGX.

STEP 3: Set Network Convertor (UTY-VLGX) to Installation Mode.

STEP 4: Setting ID number of UTY-VLGX on PC screen of Tool for Network Convertor.
(ID number is required to identify UTY-VLGX from BMS. A maximum of four Network Convertors can be connected to one BMS, and ID number allocation is like 00, 01, and so on.)

STEP 5: Initial setting of Indoor Unit & Outdoor Unit Addresses by using the Tool for Network Convertor.

STEP 6: Register the initial setting data to UTY-VLGX. Click 'Register' dialog.

STEP 7: Set Configuration Properties.

It is the communication properties of UTY-VLGX. Select the following Communication items & Communication type if necessary. Otherwise, communication will be taken place by the Default values.

● Select Communication items
  -Event Driven communication or Cyclic communication.
   (Default: Cyclic 3minutes)
  -Communication Interval Time during turning ON all together.
   (Default: 3 minutes)

● Select Communication type (to communicate data with BMS)
  -Communicate only when changing network variable or communicate all network variable. (Default: Only when changing network variable)
  -Communicate only when changing room temperature value.
   (Default: Room temperature changed value 1°C)

STEP 8: Register the Configuration Properties data to UTY-VLGX. Click 'Register' dialog.

STEP 9: Making / Modifying XIF, and transfer XIF data by USB memory or floppy disk for binding.

STEP 10: Reset Network Convertor (UTY-VLGX) to press 'Reset SW7'.

STEP 11: Turn OFF the power. After that, remove the connection of PC & Network Convertor (UTR-VLGX) respectively.

In this stage, Network Convertor (UTY-VLGX) is ready for binding & commissioning.

Important: Network Convertor will not operate if,

- VRF network system address (Outdoor & Indoor units address) allocation information are not registered to Network Convertor.
- XIF data information and VRF network system address allocation information must not be same.
- Binding & Commissioning is not executed. (During binding, read out the Network Convertor Neuron ID by pushing BMS service switch (SW 2) on the main PCB of Network Convertor)
- If the ID number registered to the Network Convertor is not same as the ID number which is included in the XIF of Network Convertor.

3-3. BACnet® GATEWAY (Software)

■ MODEL : UTY - ABGX

■ FEATURES

- It is possible to connect medium to large sized BMS to VRF network system via BACnet®, a global standard for open networks.
- A maximum of 1600 indoor units with 4 VRF network systems (a maximum of 400 indoor units & 100 outdoor units for one network system) can be connected to one BACnet® Gateway.
- It is possible to control or monitor VRF network system from BMS via BACnet® Gateway.
- Compatible with BACnet® (ANSI / ASHRAE-135-2004) application specific controller (B-ASC).
- Compatible with BACnet®/IP over Ethernet.
- Scheduling function, Alarm & Event functions as well as Electricity Change Apportionment function are provided in BACnet® Gateway.
- Connection between VRF network system to personal computer is possible via small U10 USB interface. However, both U10 USB interface & personal computer are field supplied items.

■ SYSTEM DIAGRAM
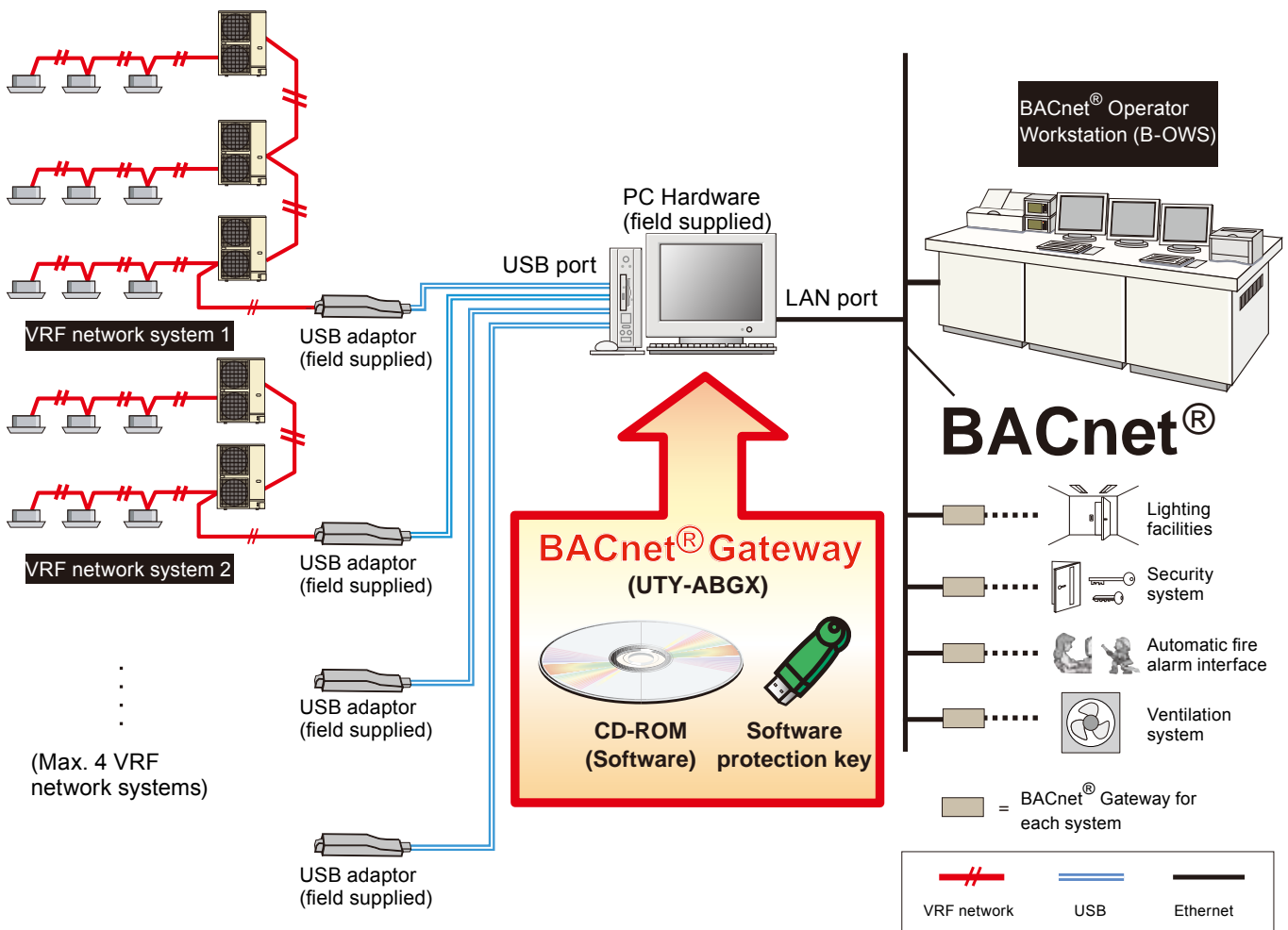
■ FUNCTIONS

● Indoor unit control (Output Object)

Commands from BMS are sent to the respective indoor units via BACnet® Gateway. (BMS → BACnet® Gateway → respective indoor units of VRF Network system)

● Indoor unit status monitoring (Input Object)

Indoor unit status is communicated to the BMS via BACnet® Gateway. (BMS ← BACnet® Gateway ← respective indoor units of VRF Network system)

■ BACnet® OBJECT LIST

● Type : Indoor

Object name	Code (II)	Function	Unit					
			Inactive	Active				
			Text-1	Text-2	Text-3	Text-4	Text-5	Text-6
AI	10	Set temp. status	°C					
	11	Space temp.	°C					
	12	Auto temp. (Low limit status)	°C					
	13	Auto temp. (High limit status)	°C					
	14	Cool/Dry temp. (Low limit status)	°C					
	15	Cool/Dry temp. (High limit status)	°C					
	16	Heat temp. (Low limit status)	°C					
	17	Heat temp. (High limit status)	°C					
AO	10	Temp. setting	°C					
	11	Auto temp. (Low limit setting)	°C					
	12	Auto temp. (High limit setting s)	°C					
	13	Cool/Dry temp. (Low limit setting)	°C					
	14	Cool/Dry temp. (High limit setting)	°C					
	15	Heat temp. (Low limit setting)	°C					
	16	Heat temp. (High limit setting)	°C					
AV	10	ECA *1 operation data						
BI	10	Operation status	OFF	ON				
	14	Filter sign status	Unsigned	Signed				
	15	Indoor unit error status	Normal	Fault				
	16	Antifreeze operation status	Reset	Set				
	17	SAVE operation status	Normal	SAVE				
	18	Forced thermostat off status	Reset	Set				
	19	Emergency stop status	Normal	Stop				
	20	Mode mismatch status	Normal	Mismatch				
	21	Protect antifreeze status	Reset	Set				
	22	Temp. limit valid status	Invalid	Valid				
BO	10	Operation setting	OFF	ON				
	14	Filter sign resetting	Reset	Not reset				
	15	Antifreeze operation setting	Reset	Set				
	16	SAVE operation setting	Reset	Set				
	17	Forced thermostat OFF setting	Reset	Set				
	18	Emergency stop setting	Reset	Set				
	19	Temp. limit valid setting	Invalid	Valid				
MI	10	Operation mode status	Cool	Heat	Fan	Dry	Auto	
	11	Fan speed status	Low	High	Med	Auto		
	12	Indoor unit error code	Refer to FGL original error code					
	13	R.C. prohibition status	Refer to R.C. prohibition setting chart					
	14	Vertical air flow direction status	1	2	3	4	Swing	
	15	Horizontal air flow direction status	1	2	3	4	5	Swing
	16	Special driving status	Normal	Defrost	Oil Recovery			
	17	Managed mode	None	Master	Slave	Outer		
MO	10	Operation mode setting	Cool	Heat	Fan	Dry	Auto	
	11	Fan speed setting	Low	High	Med	Auto		
	12	R.C. prohibition setting	Refer to R.C. prohibition setting chart					
	13	Vertical air flow direction setting	1	2	3	4	Swing	
	14	Horizontal air flow direction setting	1	2	3	4	5	Swing
TL	10	ECA *1 operation data log						

*1) ECA: Electricity Charge Apportionment.

● Type : Outdoor

Object name	Code (II)	Function	Unit					
			Inactive	Active				
			Text-1	Text-2	Text-3	Text-4	Text-5	Text-6
BI	30	Outdoor unit error status	Normal	Fault				
	31	Forced OFF status	Reset	Set				
BO	30	Forced OFF setting	Reset	Set				
MI	30	Outdoor unit priority operation status *2	Cool	Heat	Neutral	None		
	31	Outdoor unit error code	Refer to FGL original error code					
MO	30	Outdoor low noise operation setting *3	Stop	Level-1 Quiet	Level-1 Ability	Level-2 Quiet	Level-2 Ability	

*2) Priority operation status is for Heat Pump type VRF
   In other types of systems, this status is not necessary.
*3) Outdoor unit firmware may need to be updated for this function to work.
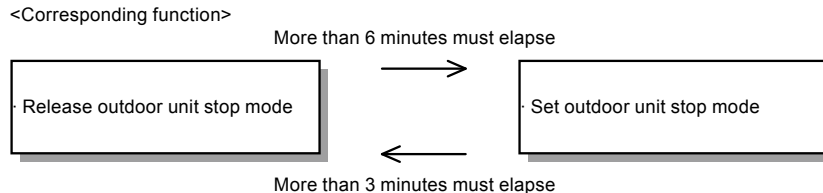   Contact your local sales company for detail.

● Type : Gateway

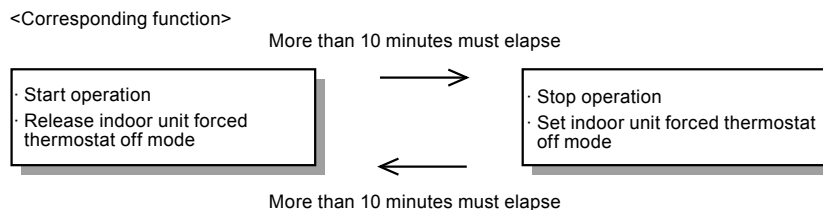| Object name	Code (II)	Function	Unit					
			Inactive	Active				
			Text-1	Text-2	Text-3	Text-4	Text-5	Text-6
Device	-	Device information						
BI	00	LON Network Adaptor error status	Normal	Abnormal				
	01	Gateway error status	Normal	Abnormal				
MI	00	LON Network Adaptor unit error code	Refer to FGL original error code					
	01	Gateway error code	Refer to FGL original error code					
	02	ECA *1 status	Invalid	Valid (Stop)	Include	Exclude		
MO	01	ECA *1 setting	Stop	Include	Exclude			
Notification	00-99	Notification class						
CAL	00	Calendar "Holiday-1"						
	01	Calendar "Holiday-2"						
	02-31	Calendar "Special day-1" - "Special day-30"						
Schedule	00-99	Schedule timer						

*1) ECA: Electricity Charge Apportionment.

∗ To protect the compressor of the outdoor unit, please carefully read and understand the following cautions that may affect the operation of the compressor before executing the setting.
   • When regularly making the following settings to the same outdoor unit by using schedule function etc., please leave the following interval.

<Corresponding function>

More than 6 minutes must elapse

· Release outdoor unit stop mode	→	· Set outdoor unit stop mode
	←	

More than 3 minutes must elapse

   • When performing periodical settings like schedule settings for the following functions, perform the setting to all the indoor units in the same refrigerant system simultaneously, conforming to the timing restriction described below.

<Corresponding function>

More than 10 minutes must elapse

· Start operation · Release indoor unit forced thermostat off mode	→	· Stop operation · Set indoor unit forced thermostat off mode
	←	

More than 10 minutes must elapse

✳ Forced thermostat OFF instruction and outdoor unit stop instruction

　・Only one equipment can send these instructions for each refrigerant system.

　・When these instructions are sent by multiple equipments, the system may not respond asinstructed or may malfunction.

✳ The electricity charge apportionment function of VRF system can only be performed from one equipment simultaneously.

■ PACKING LIST

Name and shape	Quantity	Application
CD-ROM	1	Includes the software and manuals for BACnet® Gateway.
Wibu key (Software protection key)	1	Software protection key to be inserted in a USB slot running BACnet® Gateway. BACnet® Gateway may only run on a PC with Wibu Key.

■ PERSONAL COMPUTER SPECIFICATIONS

Operating System	Microsoft® Windows® XP Professional Service Pack 3 or later
	Microsoft® Windows® Vista Home Premium, Business Service Pack 2 or later
	Microsoft® Windows® 7 Home Premium, Professional Service Pack 1 or later
	* 64-bit version of Windows® are not supported.
	* Langages supported (English, Chinese, French, German, Russian, Spanish, and Polish)
CPU	Intel® Pentium® / Celeron®, AMD Athlon / Duron processor 2GHz or higher
HDD	40GB or more of free space
Memory	2GB or more
Display	1024 x 768 dots or more, High color (16bit) or more
Interface	USB port (x 2-5) is required
	Ethernet port is required
Software required	Adobe® Reader® 9.0 or later
Hardware required	CD-ROM drive

■ USB ADAPTOR SPECIFICATIONS

Product Name : Echelon® U10 USB Network Interface – TP / FT-10 Channel

Model Number: 75010R

■ INSTALLATION PROCEDURE

Before doing installation, connect between the VRF Network System and USB Adaptor.

Installation steps in brief are as follows:
(For detail, please check the Installation and Operation Manual)

Step1: Install the driver for USB Adaptor to PC
   *in this stage, do not connect the USB Adaptor to PC

Step2: Install the BACnet® Gateway (Application Software) to PC

Step3: Restart PC.

Step4: After PC restart, make sure that the USB Adaptor, WIBU-KEY and Ethernet cable for the BACnet® Gateway are connected to PC

Step5: Startup the application.

Step6: Input all necessary initial setting items like, IP Address, and others. After that, click the OK button. USB Adaptor setting screen pops up automatically, select the connected adaptor and click OK button. After that, unit register screen appears automatically, scanning all connected units and click OK button. Complete the startup operation if Gateway execution screen appears on PC screen.

Step7: Arrange the information between BMS and BACnet® Gateway using the Read Property Service and so on.

3-4. SIGNAL AMPLIFIER

■ MODEL : UTY - VSGX

If the total length of transmission line exceeds 500m, or the number of units exceeds 64 units, Signal Amplifier will be necessary to use.
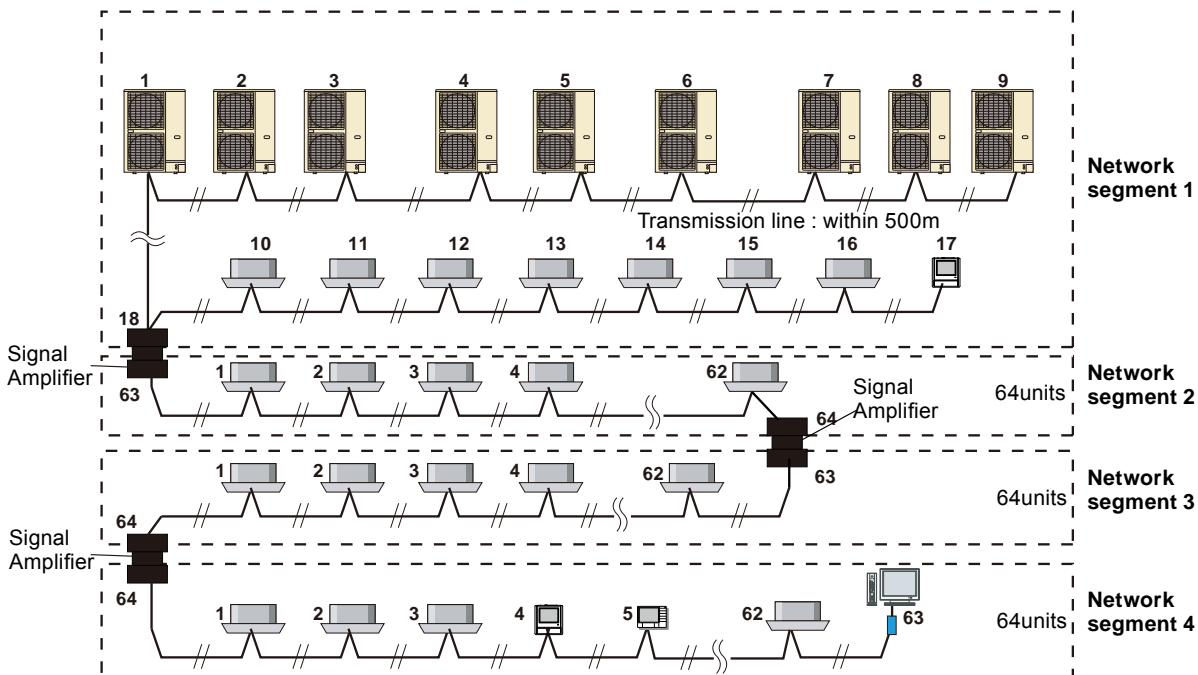
■ FEATURES

To prevent the drop of signal level by taking distance of length or quantity of unit in VRF network with installing signal amplifier, signal level can be recovered.

- Transmission line length can be extended up to 3600m with multiple signal amplifier.
- Up to 8 Signal Amplifier can be installed in a VRF system.

■ SYSTEM DIAGRAM
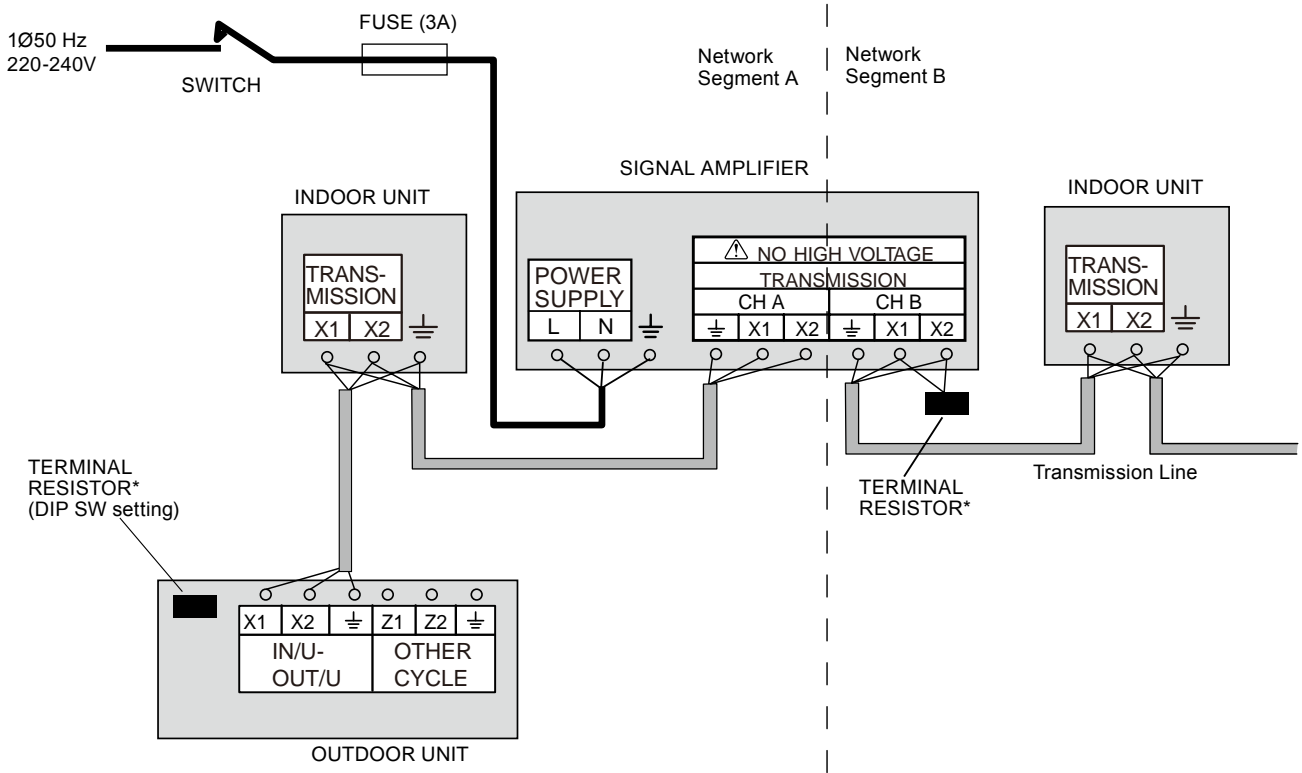
Each network segment must be within

- Total wiring length of transmission line : 500m
- A number of units *1 : 64
- The number of terminal resistor : 1

*1: Refer chapter 6.SYSTEM DESIGN and Meaning of unit on 1-2 VRF NETWORK SYSTEM.

Note:
- 22AWG Level 4 cable with shielded(National Electrical Manufacturers Association (NEMA)** differs from the Category 4 specification proposed by the Electronic Industries Association/Telecommunication Industry Association (EIA/TIA)**
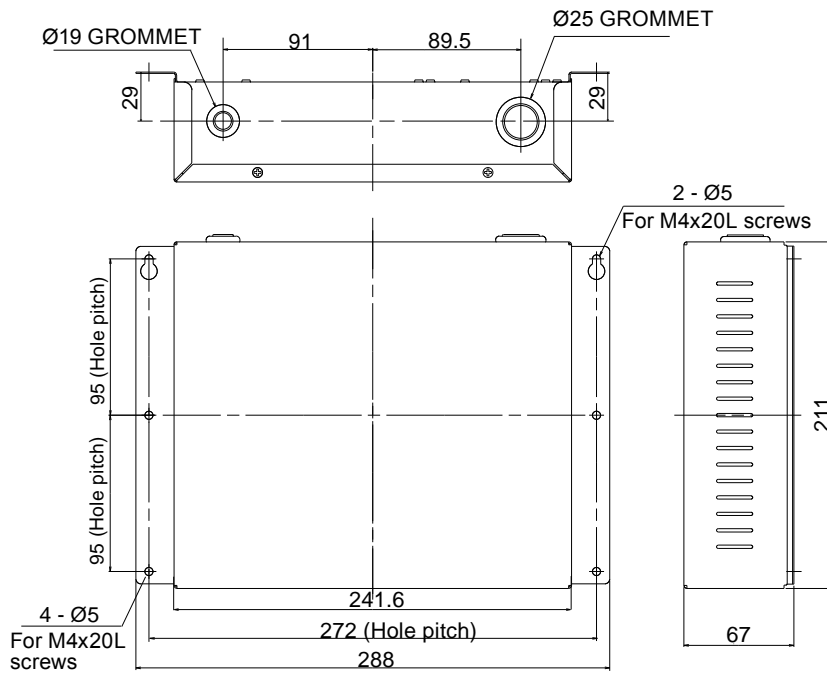
■ ELECTRICAL WIRING

1Ø50 Hz
220-240V

SWITCH

FUSE (3A)

Network Segment A | Network Segment B

SIGNAL AMPLIFIER

INDOOR UNIT

TRANS-MISSION
X1 | X2

POWER SUPPLY
L | N

⚠ NO HIGH VOLTAGE
TRANSMISSION
CH A | CH B
X1 | X2 | X1 | X2

INDOOR UNIT

TRANS-MISSION
X1 | X2

TERMINAL RESISTOR*
(DIP SW setting)

TERMINAL RESISTOR*

Transmission Line

X1 | X2 | Z1 | Z2
IN/U-OUT/U | OTHER CYCLE

OUTDOOR UNIT

* Make sure to install 1 peace of terminal resistor to each network segment.
  Terminal resister is provided for each outdoor unit, but please confirm that there is only one terminal resistor in the same network segment.

■ DIMENSIONS

(Unit : mm)

Ø19 GROMMET   91   89.5   Ø25 GROMMET

29   29

2 - Ø5
For M4x20L screws

95 (Hole pitch)

95 (Hole pitch)

211

4 - Ø5
For M4x20L screws

241.6

272 (Hole pitch)

288

67

■ PACKING LIST

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

Name and shape		Quantity	Application
Installation manual		1	
Binder		4	For mounting the power supply cable, and transmission cable.
Screw (M4 x 20mm)		4	For mounting the signal amplifier.
Terminal resistor		1	

■ WIRING SPECIFICATIONS

Use	Size		Wire type	Remarks
Power supply cable	Maximum	1.25mm^2	245 IEC 57 or equivalent	1 ø AC220 - 240 V 50/60Hz, 2 Wire + ground (Always ground the unit)
	Minimum	0.5mm^2		
Transmission cable	0.33mm^2 (22AWG)		LEVEL4 (NEMA) non-polar 2 core, twisted pair solid core Shielded	LONWORKS$^®$ compatible cable
Fuse capacity	3A			

■ SPECIFICATIONS

● Main specification

| Power supply		1ø AC220 - 240V 50/60Hz
Input Power (W)		4.5
Temperature(°C)	Operating	0 to 46
	Packaged	-10 to 60
Humidity (%)	Packaged	0 to 95 (RH) ; No condensation
Dimensions (H x W x D) (mm)		67 x 288 x 211
Weight (g)		1500

3-5. EXTERNAL SWITCH CONTROLLER
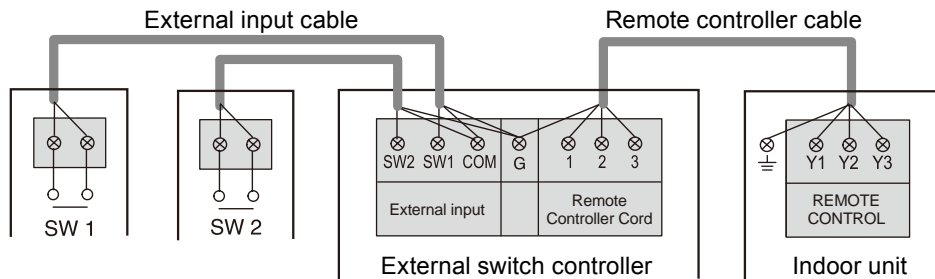
■ MODEL : UTY-TEKX

■ FEATURES

- Air conditioner switching can be controlled by connecting other sensor switches.
- ON/OFF, Temperature, Fan speed and Operating mode can be switched by a combination with Card-key switch equipped in facilities such as hotel room.
- Card-key or other sensor switches are available as a field supplied parts.

■ SYSTEM DIAGRAM
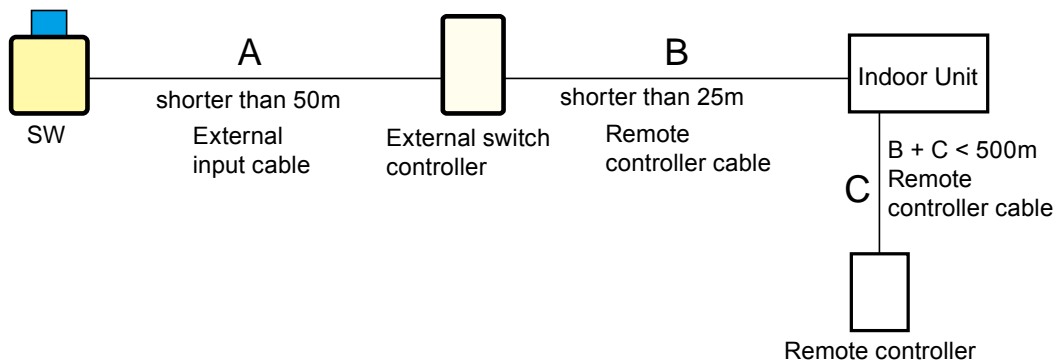
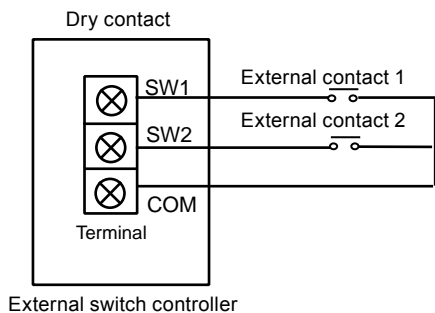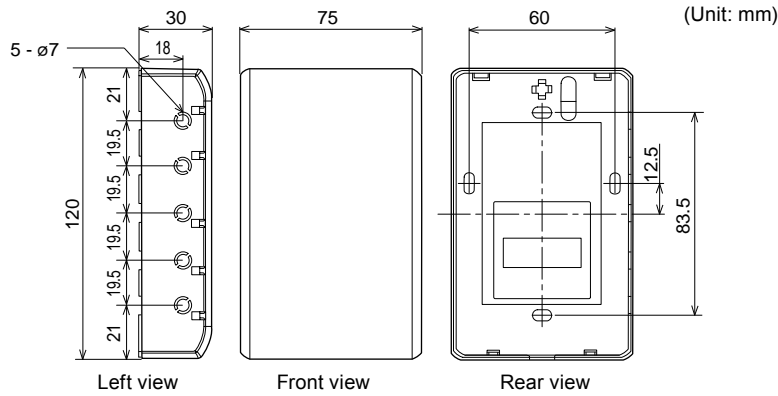## ■ ELECTRICAL WIRING

*Connect SW2 only when it is used.

Connection to external contacts

Open circuit voltage : 12 (V) ± 2 (V).

Short circuit current : ≤ 2 (mA).

Short circuit detection resistance (R_{ON}) : ≤ 1 (kilo-ohm).

Open circuit detection resistance (R_{OFF}) : ≥ 50 (kilo-ohm).

■ DIMENSIONS

5 - ø7

30   75   60   (Unit: mm)

18

21
19.5
19.5
19.5
19.5
21

120
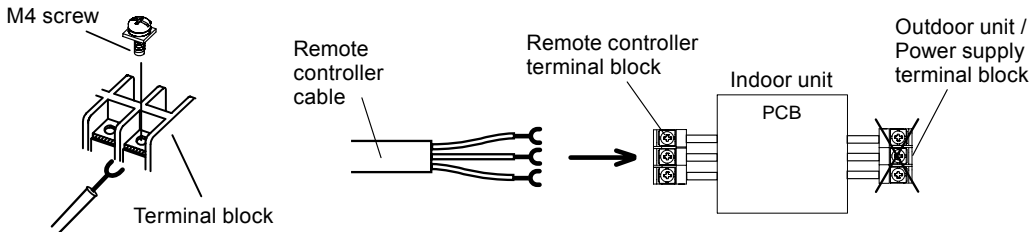
12.5
83.5

Left view   Front view   Rear view

■ INSTALLATION
● Connection Pattern

Note: Connection pattern is different according to type of Indoor unit.

Indoor unit types	Connection Pattern
All Cassette type	Pattern A
All Duct type	
All Ceiling type	
Compact Wall Mounted type	Pattern B
Wall Mounted type	

● Pattern A

Connect the end of remote controller cable directly to the exclusive terminal block.

M4 screw

Terminal block

Remote controller cable

Remote controller terminal block

Indoor unit PCB
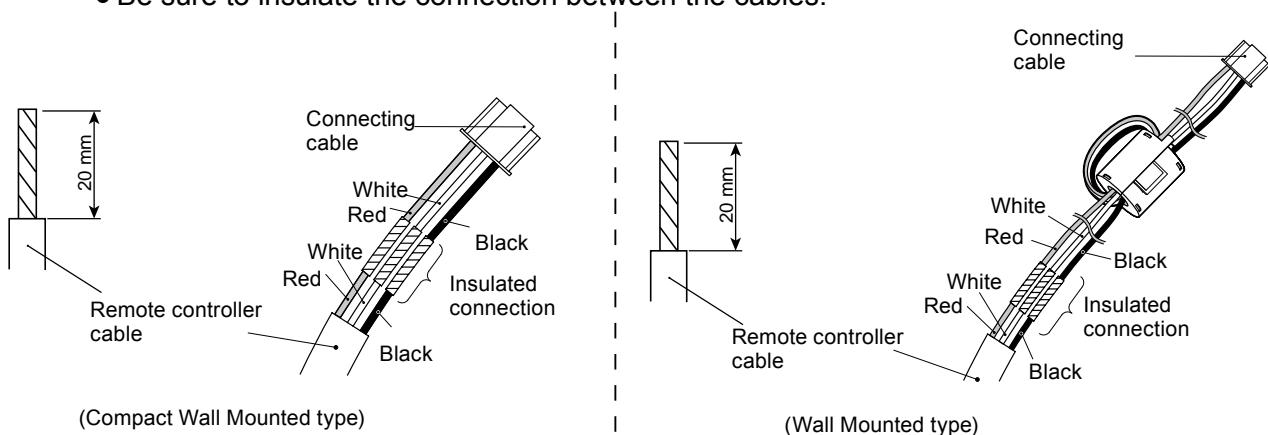
Outdoor unit / Power supply terminal block

Note: It may be failed if it is connected to the outdoor unit or the terminal block for power supply.
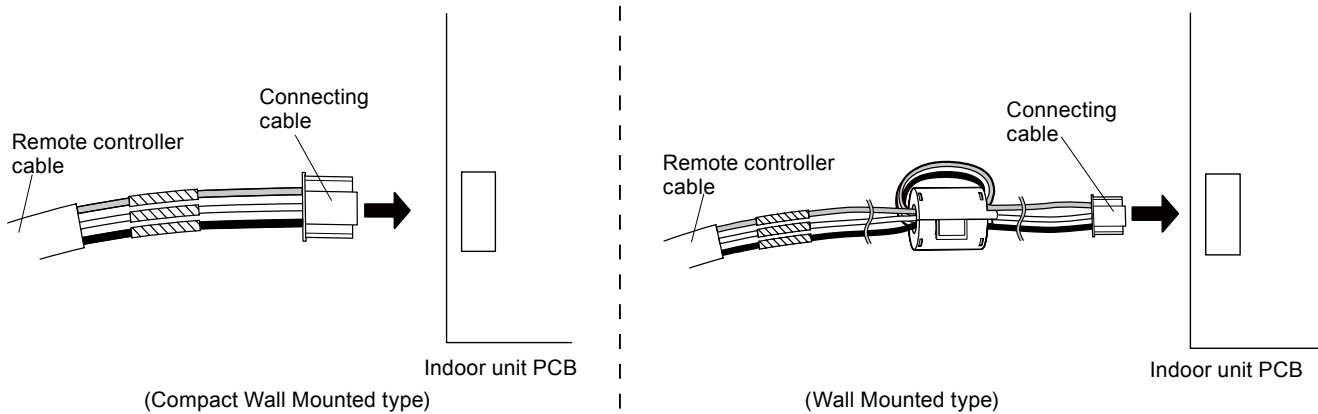
● Pattern B

1) Modify the remote controller cable as per below methods.

● Use a tool to cut off the terminal on the end of the remote controller cable and then remove the insulation from the cut end of the cable as shown in Fig.
● Connect the remote controller cable and connecting cable as shown in Fig.
● Be sure to insulate the connection between the cables.

20 mm

Connecting cable

White
Red

White
Red

Black

Insulated connection

Remote controller cable

Black

(Compact Wall Mounted type)

Connecting cable

20 mm

White
Red

White
Red

Black

Insulated connection

Remote controller cable

Black

(Wall Mounted type)

2) Method of connecting remote controller cable

● Connecting cable made by above-mentioned 1) is connected with PCB of Indoor unit.

Remote controller cable

Connecting cable

Indoor unit PCB

(Compact Wall Mounted type)

Remote controller cable

Connecting cable

Indoor unit PCB

(Wall Mounted type)

■ PACKING LIST

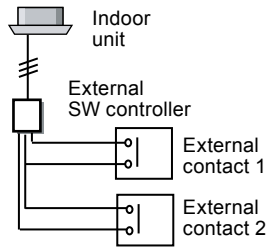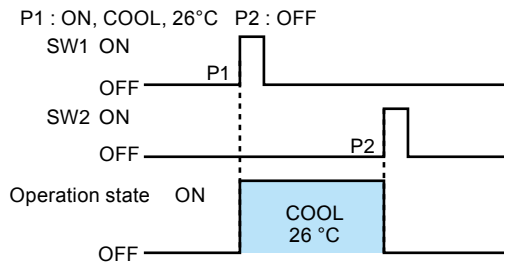| Name and shape		Quantity	Application
Installation manual		1	
Screw (M4x16mm)		2	For installing the external switch controller
Binder		5	For external switch controller and cable binding

■ WIRING SPECIFICATIONS

Use	Size	Wire type	Remarks
Remote controller cable	$0.33mm^2$ (22AWG)	Polar 3core	Use sheathed PVC cable or shielded cable in accordance with the regional cable standard.
External input / output cable	$0.33mm^2$ (22AWG)	Polar 2core, Twisted pair	Use shielded cable in accordance with the regional cable standard.

■ SPECIFICATIONS

Power supply	DC 12V
Dimensions (H x W x D) (mm)	120 x 75 x 30
Weight (g)	100

■ EXAMPLE

Application	Setting	Wiring	Operation example
When controlling the individual operation states with two external contact	MODE0 P1: Arbitrary operation state Contact OFF→ON P2: Arbitrary operation state Contact OFF→ON Others setting are arbitrary.	Indoor unit External SW controller External contact 1 External contact 2	P1 : ON, COOL, 26°C P2 : OFF SW1 ON OFF P1 SW2 ON OFF P2 Operation state ON COOL 26 °C OFF

■ EXAMPLE

Application	Setting	Wiring	Operation example
When controlling operation by ON or OFF of an external contact switch	MODE1 P1 : Arbitrary operation state P2 : Arbitrary operation state Others setting are arbitrary.	Indoor unit External SW controller External contact 1	P1 : OFF P2 : ON, COOL, 26°C SW1 ON / OFF P2 ... P1 Operation state ON / OFF COOL 26 °C
When operating in the state set when an external contact switch was set to ON and returning to the original operation state when the switch was set to OFF	MODE1 or 0 P1 : SETBACK P2 : Arbitrary operation state Others setting are arbitrary.	Indoor unit External SW controller External contact 1	MODE1, P1 : SETBACK P2 : ON, COOL, 26°C SW1 ON / OFF P2 ... P1 Operation state ON / OFF COOL 23 °C COOL 26 °C COOL 23 °C
When operated in the state when an external contact switch was set to OFF and returned to original operation state	MODE1 or 0 P1 : Arbitrary operation state P2 : SETBACK Others setting are arbitrary.	Indoor unit External SW controller External contact 1	MODE1, P1 : ON, COOL, 26°C P2 : When SETBACK SW1 ON P1 ... P2 OFF Operation state ON / OFF COOL 23 °C COOL 26 °C COOL 23 °C
When a temperature sensor switch is connected and cooling and heating switching is performed.	MODE2 P1 : ON, COOL or HEAT P2 : ON, COOL or HEAT Operation conditions: Unit operationg only Others setting are arbitrary.	Indoor unit Thermal sensor SW An external switch controller is connected to all the indoor units of the same refrigerant system and cooling and heating are switched by one temperature sensor.	P1 : ON, COOL, 26°C P2 : ON,HEAT, 21°C SW1 ON P2 ... P1 OFF Operation state ON / OFF COOL 23 °C HEAT 21 °C COOL 26 °C
When preventing chattering noise within 1 minute of the external contact switch.	MODE1 Delay-time setting: Delay P1 : Arbitrary operation state P2 : Arbitrary operation state Others setting are arbitrary.	Indoor unit External SW controller External contact 1	P1 : OFF P2 : ON, COOL, 26 °C SW1 ON P2 ... P1 1min 1min Operation state ON / OFF COOL 26 °C

4. SERVICE & WEB MONITORING TOOL

4-1. SERVICE TOOL (Software)

■ MODEL : UTY - ASGX

Extensive monitoring and analysis functions for installation and maintenance.

Operation status and error history can be grasped promptly and adequately.

■ FEATURES

- Operation status can be checked and analyzed to detect even the small abnormalities.
- Data collected and stored on site can be checked later, off-line, off-site for more detail analysis.
- One VRF network system with maximum number of up to 400 units can be monitored and controlled.
- Operation status and various sensor information can be monitored and checked real time in the form of list, refrigerant circuit diagram, graphs as well.
- Simple operation control functions are useful during maintenance.
- The recent error history can be retrieved from units on demand to perform analysis on the cause of the error, after connecting Service Tool to the VRF network system.
- Commissioning tool supports test runs, data storage for each unit and saving of data as CSV files, which may be formatted to create commissioning report.
- Connectable to any point of transmission line with USB adaptor *1 (field supplied)
- Connection between VRF network system to personal computer is possible via small U10 USB interface. However, both U10 USB interface & personal computer are field supplied items.
- New 7 functions are added for J-II series and service performance is advanced furthermore. (supported by Ver. 1.2 or later)

*1 : Service Tool (UTY-ASGX) will only support USB type network adaptor and will not support transmission adaptor of the traditional type(UTR-YTMA)

■ FUNCTIONS

1) System List

Displays the overall operation status of all or specified units in the system in a list form.

2) Equipment Detail (Diagram)

Displays the detail information for sensor values, electrical components etc. for the specified units in schematic. The information here can be used along with the detail information in list form, to check the operation status of units and make detail analysis on the cause, in case an error occurs.
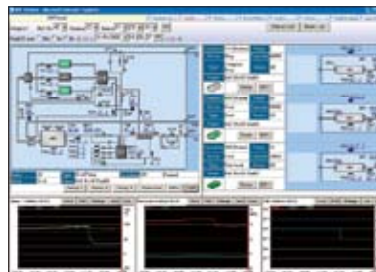
3) Equipment Detail (List)

Displays the detail information for sensor values, electrical components etc. of units in a specified refrigerant system in list form. The information here can be used along with the detail information in diagram form, to check the operation status of units and make detail analysis on the cause, in case an error occurs.

4) Operation History

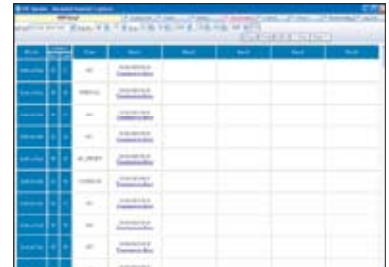The indoor units or outdoor unit operation history can be recorded.

The displayed operation history can be printed out and saved to a CSV file.
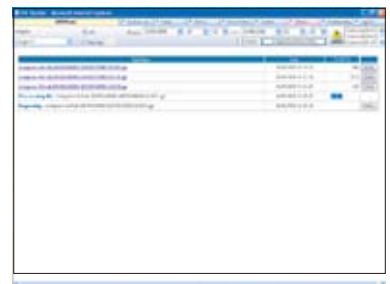

5) Error History

Displays the error information for each unit. The error information can sequentially be displayed up to 50 items as they occur starting with the latest error.

6) Remote File Download

Operation and error history data can be downloaded. Only the required data may be downloaded specifying the refrigerant system, unit and time range.

7) Commissioning Tool

Test run commands can be executed with this tool.

During test running, the outdoor unit / indoor unit sensor data can be saved (commissioning log data).

After the end of test running, this data can be exported in CSV file format.
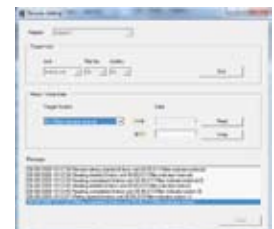
8) Network Topology Analyzer *

A list of units connected to the VRF system network is displayed in network segments in tree form.

9) Remote Setting *

Function (Field) Setting for indoor unit is realized remotely.

10) System Time Setting *

An arbitrary time is set for all the remote controllers within the system.

*: Supported by Ver. 1.1 or later

11) Central Release *

The operation setting restriction function of the indoor units set from the controller can be forcibly released.(remote controller inhibit, temperature upper/lower limit setting)

12) Model Name Writer *

An arbitrary model name can be written to the target unit.

13) Error Memory Reader *

When an error occurs at an outdoor unit, the operation data records before the error are acquired over a network and saved to a CSV file.

Note: To perform "Error Memory Reading", Service Tool and the corresponding outdoor unit must be connected directly with each other. Refer to the Operation Manual of the Service Tool for detail.

14) Time Guard Information *

Reference data for judging the maintenance period of indoor and outdoor units (compressor,FAN, etc. integrated time) is output to a CSV file.

*: Supported by Ver. 1.1 or later

■ SYSTEM DIAGRAM
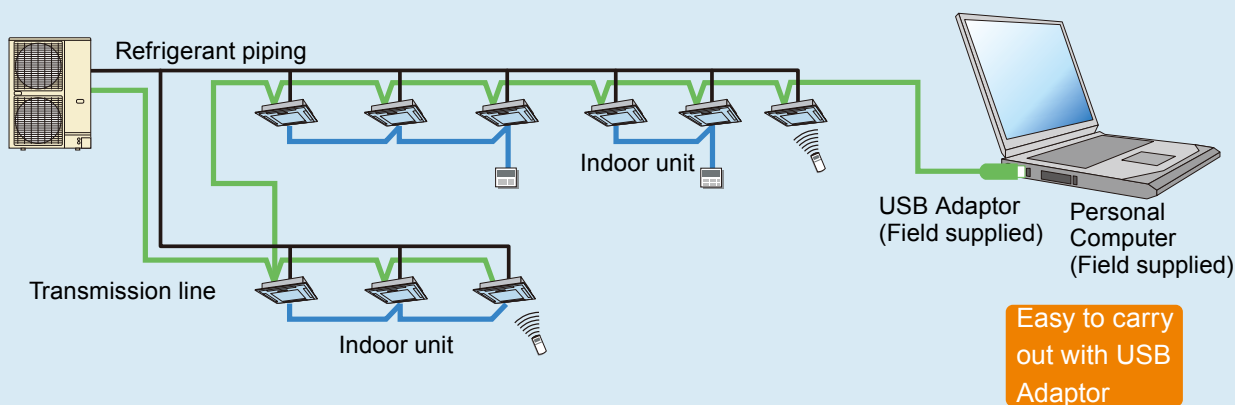
* USB Adaptor is U10 USB Network interface of Echelon® corporation.

■ PACKING LIST

Name and shape	Quantity	Application
CD-ROM	1	Includes the software and manuals for Service Tool.
Wibu key (Software protection key)	1	Software protection key to be inserted in a USB slot running Service Tool. Service Tool may only run on a PC with Wibu Key.

■ PERSONAL COMPUTER SPECIFICATIONS

Operating System	Microsoft® Windows® XP Professional (English version / Service Pack 3 or later) Microsoft® Windows® Vista® Home Premium, Business (English version / Service Pack 2 or later) Microsoft® Windows® 7 Professional (English version / Service Pack 1 or later) * 64-bit version of Windows® are not supported.
CPU	Intel® Pentium® / Celeron®, AMD Athlon™ / Duron™ 1GHz or higher
HDD	10 GB or more of free space
Memory	1GB (Vista, 7), 512MB (XP) or more
Interface	USB port for U10 USB Network Interface and Software protection key.
Software required	Internet Explorer 6.0 or 7.0 or 8.0 / Adobe® Reader® 9.0 or later
Hardware required	CD-ROM drive

■ USB ADAPTOR SPECIFICATIONS

Product Name : Echelon® U10 USB Network Interface – TP / FT-10 Channel

Model Number: 75010R
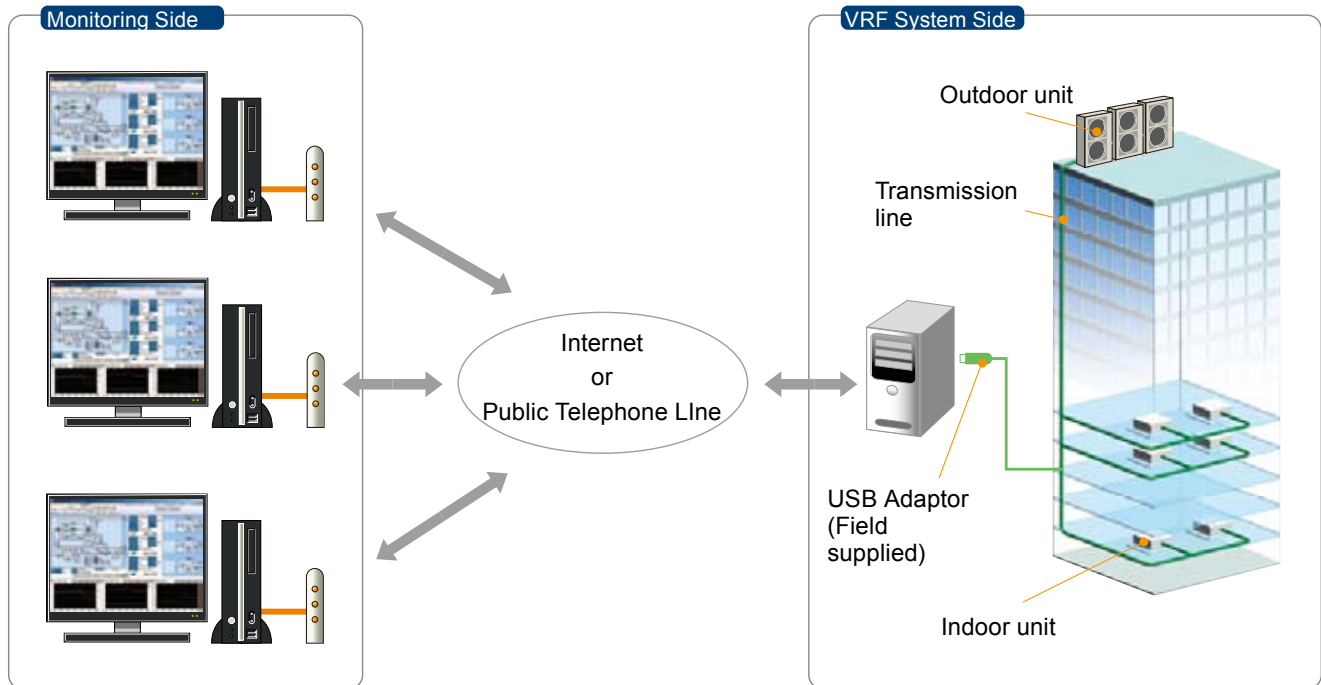
4-2. WEB MONITORING TOOL (Software)

■ MODEL : UTY-AMGX

■ FEATURES

- Troubleshooting is performed by monitoring each unit remotely during periodical system checks off-site.
- Operation status can be checked and analyzed to detect even the smallest abnormalities.
- Four VRF network systems each with 400 units, with maximum number of up to 1,600 units can be monitored and controlled.
- Operation status and various sensor information can be monitored and checked real time in the form of list, refrigerant circuit diagram, and graphs as well.
- The monitoring data in a remote side can be optionally downloaded. And, this data can be displayed in off-line mode of the Service Tool.
- Error notification can be automatically transmitted to several locations using the internet *1.
- Monitoring side computer is not required to install special software, requires only general web browser.
- Connectable to any point of transmission line with U10 USB interface *2 (field supplied)
- Connection between VRF network system to personal computer is possible via small U10 USB interface. However, both U10 USB interface & personal computer are field supplied items.
- New 5 functions are added for J-II series and service performance is advanced furthermore. (supported by Ver. 1.2 or later)
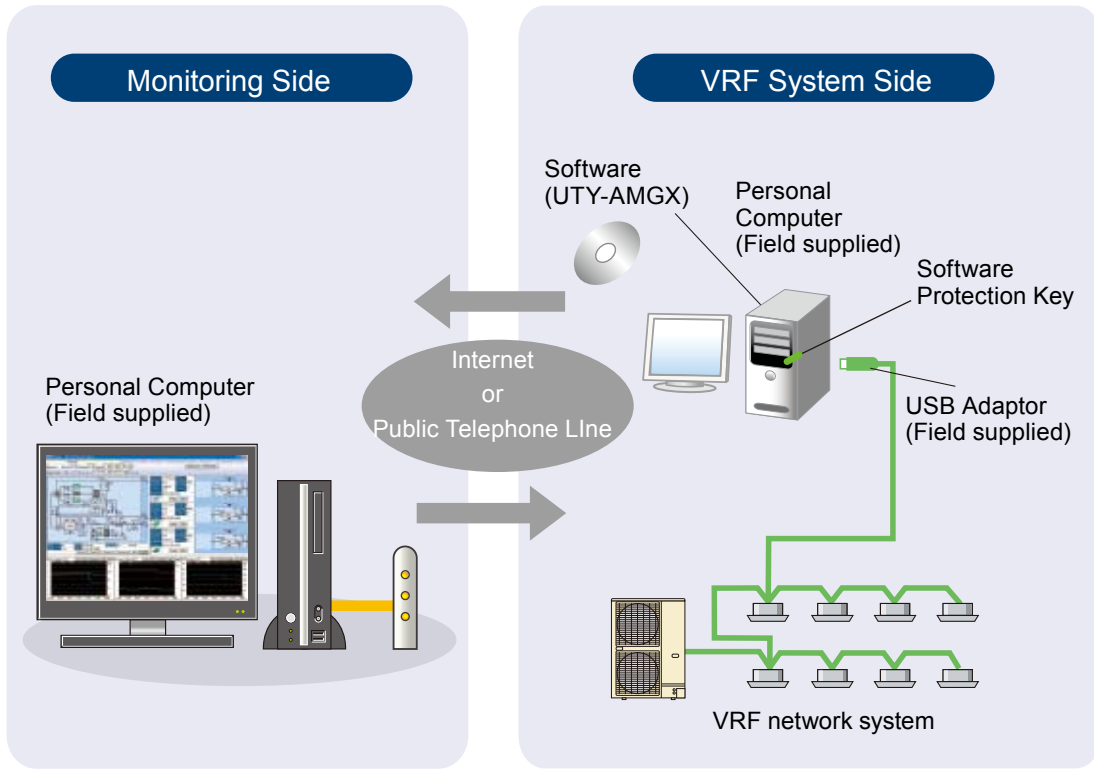
*1 : Use of internet mail system required.
*2 : Web Monitoring Tool (UTY-AMGX) will only support USB type network adaptor and will not support transmission adaptor of the traditional type (UTR-YTMA).

■ SYSTEM DIAGRAM

● System components

Monitoring Side	VRF System Side

Software
(UTY-AMGX)

Personal
Computer
(Field supplied)

Software
Protection Key

Internet
or
Public Telephone LIne

Personal Computer
(Field supplied)

USB Adaptor
(Field supplied)

VRF network system

● Support 4 VRF network system

PC USB adaptor (max. 4 adaptors per PC) permit control and monitoring of up to 1,600 units.

Suitable for large-scale buildings or hotels
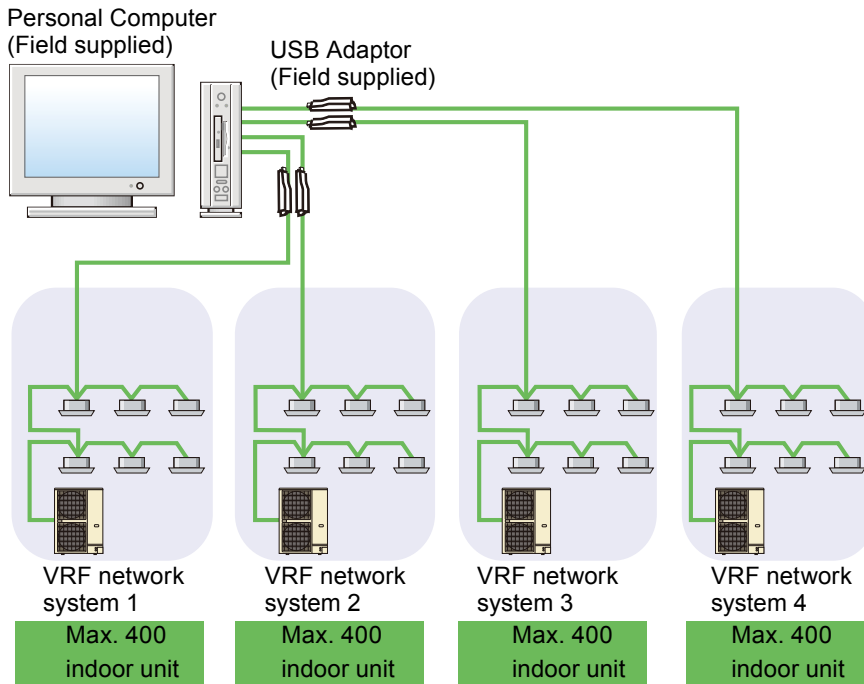
Personal Computer
(Field supplied)

USB Adaptor
(Field supplied)

VRF network system 1	VRF network system 2	VRF network system 3	VRF network system 4
Max. 400 indoor unit	Max. 400 indoor unit	Max. 400 indoor unit	Max. 400 indoor unit

■ PACKING LIST

Name and shape	Quantity	Application
CD-ROM	1	Includes the software and manuals for Web Monitoring Tool.
Wibu key (Software protection key)	1	Software protection key to be inserted in a USB slot running Web Monitoring Tool. Web Monitoring Tool may only run on a PC with Wibu Key.

■ PERSONAL COMPUTER SPECIFICATIONS

Operating System	Microsoft® Windows® XP Professional (English version / Service pack 3 or later) Microsoft® Windows® Vista® Home Premimum, Business (English version / Service pack 2 or later) Microsoft® Windows® 7 Professional (English version / Service pack 1 or later) * 64-bit version of Windows® are not supported.
CPU	Intel® Pentium® / Celeron®, AMD Athlon™ / Duron™ 1GHz or higher
HDD	40GB or more of free space
Memory	1GB or more
Interface	USB port (for U10 USB Network Interface Max.4 , Software protection key) Following interface is required for remote connection: Public Telephone LIne : Modem is required Internet using LAN : Ethernet port is required
Software required	Internet Explorer 6.0 or 7.0 or 8.0 / Adobe® Reader® 9.0 or later
Hardware required	CD-ROM drive

■ USB ADAPTOR SPECIFICATIONS

Product Name : Echelon® U10 USB Network Interface – TP / FT-10 Channel

Model Number: 75010R

■ COMPARISON TABLE

No.	Item	Service Tool UTY-ASGX	Web Monitoring Tool UTY-AMGX	
			VRF network system Side	Monitoring Side
1	Interchangeability of equipment	●	●	●
2	Indication of equipment list	●	●	●
3	Operation control	●	●	—
4	Indication of refrigerant circuit diagram	●	●	●
5	Commissioning tool	●	●	—
6	Monitoring of equipment information	●	●	●
7	Monitoring of operating condition	●	●	●
8	Monitoring of sensor data	●	●	●
9	Storage and CSV output of operating history (sensor data)	●	●	●
10	Indication of trend graph	●	●	●
11	Printing of trend graph	●	●	●
12	Monitoring and screen display of abnormalities	●	●	●
13	E-mail automatic transmission of abnormalities	—	●*1	—
14	Setting for user level	—	●	—
15	Network Topology Analyzer *	●	●	—
16	Remote Setting *	●	●	—
17	System Time Setting *	●	●	—
18	Central Release *	●	●	—
19	Model Name Writer *	●	—	—
20	Error Memory Reader *	●	—	—
21	Time Guard Information *	●	●	●

*: Supported by Ver. 1.1 or later

＊1: it is available only during a connection to the Internet.

CONTROL SYSTEM

CONTROL SYSTEM