MITSUBISHI ELECTRIC

Changes for the Better

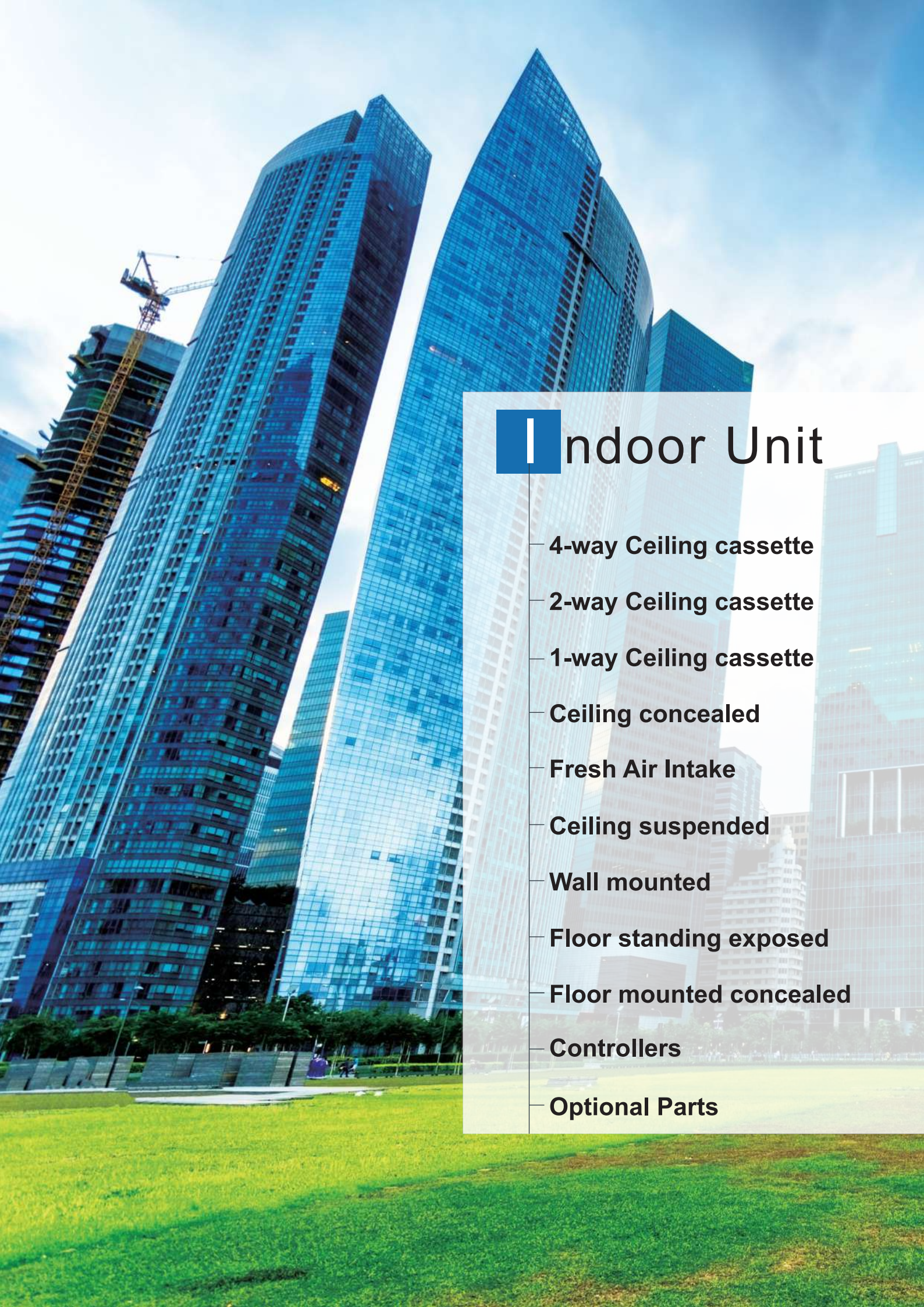
AIR CONDITIONING SYSTEMS

for a greener tomorrow eco Changes

CITY MULTI

INDOOR AIR CONDITIONERS AND CONTROLS

CM14AS-N AE



Indoor Unit

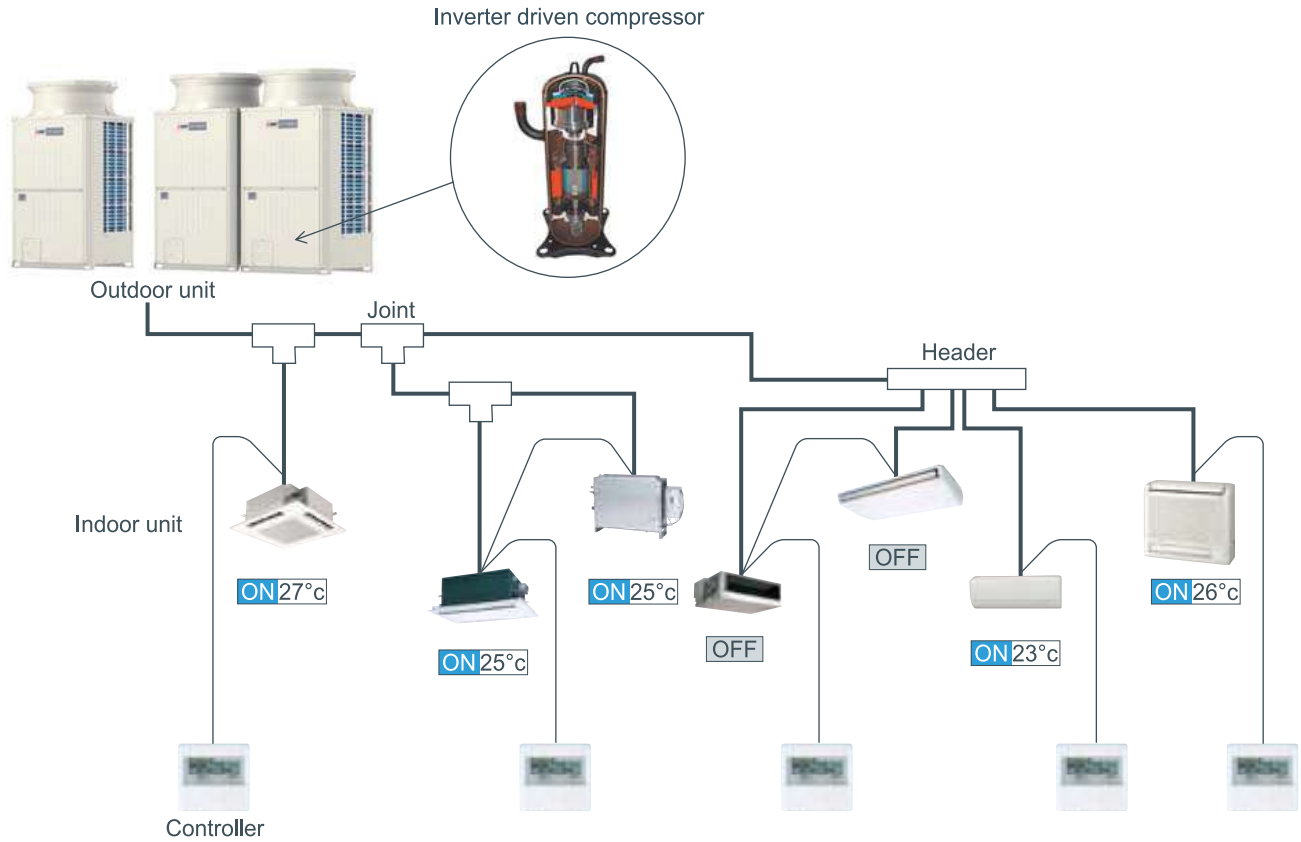
- 4-way Ceiling cassette
- 2-way Ceiling cassette
- 1-way Ceiling cassette
- Ceiling concealed
- Fresh Air Intake
- Ceiling suspended
- Wall mounted
- Floor standing exposed
- Floor mounted concealed
- Controllers
- Optional Parts

VRF system

Our answer to VRF

Mitsubishi Electric sets the boundaries of VRF technology with the CITY MULTI range, which is available using R410A refrigerant with zero ODP (Ozone Depletion Potential). The range has been specifically designed for today's building requirements and addresses key market issues such as energy efficiency, adaptability and reliability. With user friendly control systems utilizing internet technology and integrated cooling and ventilation indoor units, CITY MULTI is the benchmark and market leader in VRF technology.

VRF is a multi and direct expansion type air conditioning system where by one outdoor unit can be connected with multiples indoor units. The amount of refrigerant can be regulated freely according to the load on the indoor unit by the inverter driven compressor in the outdoor unit. Zoning in a small office is possible with a small capacity indoor unit. Energy conservation is easily handled because individual indoor units can stop and start their operation as needed. There are various indoor units available in order to suit various interior design needs.



Wide selection of indoor units

Ceiling cassette (4-way air flow)

i-see Sensor

PLFY-P VBM-E
PLFY-P VCM-E

Model	P20	P25	P32	P40	P50
Capacity	2.2kW	2.8kW	3.6kW	4.5kW	5.6kW

Model	P63	P80	P100	P125
Capacity	7.1kW	9.0kW	11.2kW	14.0kW

Features

* Automatic Air Speed Adjustment (VBM only)
* 72 different airflow patterns
* Individual Setting for each outlet direction with wired thermostat
* wide airflow (VBM only)
* i-see sensor (VBM only) *optional
* High ceiling level installation (4.2m)
* Fresh air intake *optional

Ceiling cassette (2-way air flow)

PLFY-P VLMD-E

Model	P20	P25	P32	P40	P50
Capacity	2.2kW	2.8kW	3.6kW	4.5kW	5.6kW

Model	P63	P80	P100	P125
Capacity	7.1kW	9.0kW	11.2kW	14.0kW

Features

* Slim body of 290mm height
* Equiped with drain pump mechanism
* Low noise level
* Long life filter
* Easy installation and maintenance
* Fresh air intake *optional

Ceiling cassette (1-way air flow)

PMFY-P VBM-E

Model	P20	P25	P32	P40
Capacity	2.2kW	2.8kW	3.6kW	4.5kW

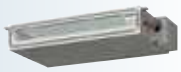
Features

* Compact and light weight
* Equiped with drain pump mechanism
* Low noise level
* Long life filter
* Easy installation and maintenance
* Fresh air intake

Ceiling concealed

PEFY-P VMR-E-L/R

PEFY-P VMA(L)-E



PEFY-P VMS1(L)-E

PEFY-P VMH(S)-E

Model	P15	P20	P25	P32	P40	P50	P63
Capacity	1.7kW	2.2kW	2.8kW	3.6kW	4.5kW	5.6kW	7.1kW

Model	P71	P80	P100	P125	P140	P200	P250
Capacity	8.0kW	9.0kW	11.2kW	14.0kW	16.0kW	22.4kW	28.0kW

Features

* Slim body of 200 & 250mm height (VMS1& VMA(L))
* Bottom & Rear inlet (VMA(L) only)
* Analogue input for auto adjust fan speed (VMA(L) only)
* Adjustable static pressure
* Drain pump option
* Low noise level
* Easy installation and maintenance

Wide selection of indoor units

Fresh Air Intake

PEFY-P VMH-E-F

Model	P80	P140	P200	P250
Capacity	9.0kW	16.0kW	22.4kW	28.0kW

Features

The Fresh Air intake indoor unit can be installed in any place.

Fresh Air can be taken in with temperature control.Outside air will be cooled down or heated up to supply it to the room, and this reduces the air conditioning load in a room.High-capacity humidifier will keep room air moist and comfortable during heating.

Ceiling suspended

PCFY-P VKM-E

Model	P40	P63	P100	P125
Capacity	4.5kW	7.1kW	11.2kW	14.0kW

Features

* Extra slim & stylish design
* Auto vane distributes air evenly
* Ultra-quiet operation
* Automatic Air Speed Adjustment
* Long life filter
* Easy installation and maintenance
* Fresh air intake

Wall mounted

PKFY-P VBM-E

PKFY-P VKM-E

PKFY-P VHM-E

Model	P15	P20	P25	P32	P40	P50	P63	P100
Capacity	1.7kW	2.2kW	2.8kW	3.6kW	4.5kW	5.6kW	7.1kW	11.2kW

Features

* Compact and light weight
* 4-Way piping
* Quiet operation
* Long life filter
* Easy installation and maintenance
* Built-in signal receiver
* Drain pump option (VHM only)

Floor standing / Floor mounted concealed

PFFY-P VLEM-E

PFFY-P VKM-E

PFFY-P VLRM-E
PFFY-P VLRMM-E

Model	P20	P25	P32	P40	P50	P63
Capacity	2.2kW	2.8kW	3.6kW	4.5kW	5.6kW	7.1kW

Features

* Sophisticated Design
* Quiet operation
* Easy installation and maintenance

System Controller

MITSUBISHI ELECTRIC's Air-conditioner Network System (MELANS) leads air conditioner management a PC browser and Network era.

▶MELANS

Use of our MELANS products enhances EFFICIENCY and QUALITY of air-conditioning, contributing to ENERGY SAVING and reduction in running cost. We offer a wide variety of MELANS products to meet all requirements - from the smallest and simplest to the largest and most complex.
We have individual remote controllers, various centralized controllers, and centralized integrated software, as well as BMS interface hardware and software etc. Above all, with AE-200E/AE-50E/AG-150A/EB-50GU-J, PC browser and long distance remote control (monitoring and operating) via communication Network is possible and easy.

M-NET

Individual Remote Controller

All of the local remote controllers feature liquid crystal and LED displays and easy to operate.

Remote Controller


PAR-31MAAE


PAR-21MAA


PAR-U02MEDA

Simple Remote Controller


PAC-YT52CRA

Wireless Remote Controller


PAR-FL32MA


PAR-FA32MA


PAR-SA9FA-E


PAR-SL94B-E

Centralized Remote Controller

Advanced Touch Controller


AT-50B

ON/OFF Remote Controller

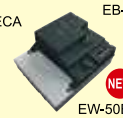

PAC-YT40ANRA


AE-200E/AE-50E


AG-150A


PAC-YG50ECA


EB-50GU-J


NEW
EW-50E

AHC ADAPTER


*1
PAC-IF01AHC-J

PI Controller


PAC-YG60MCA

DIDO Controller


PAC-YG66DCA

AI Controller


PAC-YG63MCA

*1. Advanced HVAC CONTROLLER

CITY MULTI

OUTDOOR UNIT
- S : PUMY
- Y : PUCY/PUHY

INDOOR UNIT
- PEFY
- PMFY
- PLFY
- PCFY
- PKFY
- PFFY

Interface


BAC-HD150

Interface


LMAP04-E

BACnet® transmission line (Ethernet)

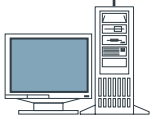
LonWorks® transmission line

MITSUBISHI ELECTRIC's CITY MULTI can be easily connected to the building management system through BACnet®.

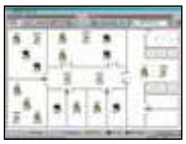
Ethernet

Air-Conditioning Control System

This is a specialized air conditioning management system, in which up to 2000 indoor units can be centrally controlled.



Integrated centralized control software TG-2000A


Integrated centralized control software TG-2000A

*Some controllers cannot be used in combination with certain models of devices.

Integrated Communications Control with Mitsubishi Electric's Unique Transmission Network (M-NET)

Model	Local remote controller *9					System controller *9													
	PAR-31MAAE	PAR-21MAA	PAR-U02MEDA	PAC-YT52CRA	PAR-FL32MA	PAC-YT40ANRA	AT-50B	AE-200E / AE-50E		AE-200E + AE-50E / EW-50E		EW-50E		AG-150A		AG-150A + PAC-YG50ECA		EB-50GU-J		TG-2000A *4 *5
Controllable Groups / Indoors (Group / Indoor) *8	1 / 16	1 / 16	1 / 16	1 / 16	1 / 16	16 / 50	50 / 50	50 / 50		200 / 200		50 / 50		50 / 50		150 / 150		50 / 50		2000 / 2000
								AE-200E	Browser*4	AE-200E	Browser*4	EW-50E	Browser*4	AG-150A	Browser*4	AG-150A	Browser*4	EB-50GU-J	Browser*4	
■Operating																				
ON / OFF	○	○	○	○	○	◎	◎	◎■	◎■	◎■	◎■	▲	◎■	◎■	◎■	◎■	◎■	▲	◎■	◎■
Mode (cool / heat / dry / fan)	○	○	○	○	○	N	◎	◎■	◎■	◎■	◎■	N	◎■	◎■	◎■	◎■	◎■	N	◎■	◎■
Temperature-set	○	○	○	○	○	N	◎	◎■	◎■	◎■	◎■	N	◎■	◎■	◎■	◎■	◎■	N	◎■	◎■
Dual set point *10	○	N	○	○	N	○*11	◎	◎■	◎■	◎■	◎■	N	◎■	N	N	N	N	N	◎■	◎■
Local Permit / Prohibit	N	N	N	N	N	N	◎	◎■	◎■	◎■	◎■	N	◎■	◎■	◎■	◎■	◎■	N	◎■	◎■
Fan speed	○	○	○	○	○	N	◎	◎■	◎■	◎■	◎■	N	◎■	◎■	◎■	◎■	◎■	N	◎■	◎■
Air-flow direction	○	○	○	○	○	N	◎	◎■	◎■	◎■	◎■	N	◎■	◎■	◎■	◎■	◎■	N	◎■	◎■
■Status monitoring																				
ON / OFF	○	○	○	○	○	◎	◎	◎	○	◎	○	▲	○	◎	○	◎	○	▲	○	○■
Mode (cool / heat / dry / fan)	○	○	○	○	○	N	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Temperature-set	○	○	○	○	○	N	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Local Permit / Prohibit	○	○	○	○	○	○	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Fan speed	○	○	○	○	○	N	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Air-flow direction	○	○	○	○	○	N	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Indoor temperature	○	○	○	○	N	N	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Filter sign	○	○	○	N	N	N	◎	○	○	○	○	N	○	○	○	○	○	N	○	○
Error flashing	○	○	○	○	○	○	◎	○	○	○	○	▲	○	○	○	○	○	▲	○	○■
Error code	○	○	○	○	N	○	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Operation hour	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	●
■Scheduling																				
One-day	○	○	○	N	N	N	○	◎■	◎■	◎■	◎■	N	◎■	●	●	●	●	N	●	●
Times of ON / OFF per day	1	8	1	N	1	N	16	24	24	24	24	N	24	24	24	24	24	N	24	24
Weekly	○	○	○	N	N	N	○	◎■	◎■	◎■	◎■	N	◎■	○●	○●	○●	○●	N	○●	○●
Times of ON / OFF per week	8 x 7	8 x 7	8 x 7	N	N	N	16 x 7	24 x 7	24 x 7	24 x 7	24 x 7	N	24 x 7	24 x 7	24 x 7	24 x 7	24 x 7	N	24 x 7	24 x 7
Annual	N	N	N	N	N	N	N	◎■	◎■	◎■	◎■	N	◎■	●	●	●	●	N	●	●
Optimized start-up	N	N	N	N	N	N	N	○	○	○	○	N	○	○	○	○	○	N	○	○
Auto-off timer	○	○	○	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Min. timer setting unit (minute)	5	1	5	N	10	N	5	1	1	1	1	N	1	1	1	1	1	N	1	1
■Recording																				
Error record	○	N	N	N	N	N	○	○	○	○	○	N	○	○	○	○	○	N	○	○
Daily / monthly report	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	◎
Electricity charge	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	●
Energy management data	N	N	N	N	N	N	N	N	●	N	●	N	●	N	N	N	N	N	●	N
■Other																				
Temp-set limitation by Local R / C	○	○	○	○	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Temp-set limitation by System controller *4	○ *6	○ *6	○	○ *6	N	N	○*6	N	○*2 *6	N	○*2 *6	N	○*2 *6	N	○*2 *6	N	○*2 *6	N	○*2 *6	◎ *6
Operation-lock	○	○	○	○	N	N	◎	N	N	N	N	N	N	N	N	N	N	N	N	N
Night setback	○	N	○	N	N	N	◎	○	○*2	○	○*2	N	○*2	○	○*2	○	○*2	N	○*2	○
Sliding temperature control	N	N	N	N	N	N	N	○	○*2	○	○*2	N	○*2	○	○*2	○	○*2	N	○*2	○
■Management (Group / Interlocked)																				
Ventilation interlock	N /○	N /○	N /○	N /○	N	○	○	○	○/○ *2	○	○/○ *2	N	○/○ *2	○	○/○ *2	○	○/○ *2	N	○/○ *2	○/○
Group setting	○ *1	○ *1	○	○ *1	N	○	○	○	○*2	○	○*2	N	○*2	○	○*2	○	○*2	N	○*2	○
Block setting	N	N	N	N	N	N	N	○	○*2	○	○*2	N	○*2	○	○*2	○	○*2	N	○*2	○
Revision of electricity charge	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	□●
■Operating on LOSSNAY interlocked (Group / Interlocked)																				
ON / OFF	N /○	N /○	N /○	N /○	N /○*7	◎/◎*3	◎/◎	◎/◎	◎/◎	◎/◎	◎/◎	▲/▲	◎/◎	◎/◎	◎/◎	◎/◎	◎/◎	▲/▲	◎/◎	◎/◎
Fan speed	N /○	N /○	N /○	N	N	N	◎/◎	◎/◎	◎/◎	◎/◎	◎/◎	N / N	◎/◎	◎/◎	◎/◎	◎/◎	◎/◎	N / N	◎/◎	◎/◎
Ventilation mode	N / N	N / N	N	N	N	N	◎/ N	◎/ N	◎/ N	◎/ N	◎/ N	N / N	◎/ N	◎/ N	◎/ N	◎/ N	◎/ N	N / N	◎/ N	○/ N
■Status monitoring on LOSSNAY interlocked (Group / Interlocked)																				
ON / OFF	N /○	N /○	N /○	N /○	N	N	○/○	◎/◎	◎/◎	◎/◎	◎/◎	▲/▲	◎/◎	◎/◎	◎/◎	◎/◎	◎/◎	▲/▲	◎/◎	◎/◎
Fan speed	N /○	N /○	N /○	N	N	N	○/○	○/○	○/○	○/○	○/○	N / N	○/○	○/○	○/○	○/○	○/○	N / N	○/○	○/○
Ventilation mode	N	N	N	N	N	N	○/ N	○/ N	○/ N	○/ N	○/ N	N / N	○/ N	○/ N	○/ N	○/ N	○/ N	N / N	○/ N	○/ N

◎: Each group / Batched ; ○: Each group ; □: Block (for CITY MULTI Indoor unit, not for all Mr.SLIM) ; ●: AE-200E/AE-50E/EW-50E/AG-150A/EB-50GU-J license registration possible.
(●) : License registration for the optional functions required N : Not Available (Not Used.) △: Batched only ; ▲: Batched handling (for maintenance) ■: Block

*1. Group setting via wiring between Indoor units with cross-over cable;
*2. Installation possible at Initial setting web browser;
*3. Inter-lock is set at Local remote controller.
*4. AE-200E/AE-50E/EW-50E/AG-150A/EB-50GU-J license registration to AE-200E/AE-50E/EW-50E/AG-150A/EB-50GU-J is required to monitor and operate the units by browser and TG-2000A.
5. AG-150A connected with PAC-YG50ECA is compatible with TG-2000A Ver.6.10 or later. EB-50GU-J is compatible with TG-2000A Ver. 6.40A or later. AE-200E/AE-50E is compatible with TG-2000A Ver. 6.50* or later. Contact your local distributor for which version of TG-2000A supports EW-50E.
*6. This function can be set only on the ME remote controller. This function cannot be used with the MA/Simple MA remote controller. (But, the validity of this function with the MA/Simple MA remote controller depends on the indoor unit model, and there are possibilities that this function can be used with them.)
*7. Inter-lock is set from system controllers (Except PAC-YT40ANRA) or local remote controllers.
*8. The maximum number of controllable units decreases depending on the indoor unit model.
*9. For indoor use only.
*10. This function is supported only when all the indoor units, remote controllers, and system controllers that are connected to a given group features the function.
*11. For the availability of the function, please contact your local distributor.
*12. Supports the dual set point function
*13. BAC-HD150 ver. 2.10 and later supports the dual set point function.

LOSSNAY remote controller PZ-52SF

■Controllable LOSSNAY Groups	1
■Controllable LOSSNAY unit	16
■Operating	
ON/OFF	○
Mode (automatic ventilation/vent-heat interchange/normal ventilation)	○
Local Permit-Prohibit	N
Fan speed	○
Air flow direction	N
■Scheduling	N
■Recording	N

■Management	
Group setting	○
Block setting	N
■Status monitoring	
ON/OFF	○
Mode (automatic ventilation/vent-heat interchange/normal ventilation)	○
Local Permit-Prohibit	○
Fan speed	○
Air flow direction	N
Filter sign	○
Error flashing	○
Error code	○

Air conditioner control system interface

LMAP04-E : LonWorks® Interface
Controls up to 50 Groups/ 50 units, for details, refer to its description.*12

BAC-HD150: BACnet® Interface
Controls up to 50 Groups/ 50 units, up to 150 Groups/ 150 units with three expansion controllers for details, refer to its description.*13

○ : Each group, N: Not Available

Centralized Remote Controller

With our new Advanced Touch Controller AT-50B, easy and simple operation on the touch panel offers an optimal air environment for individual unit.

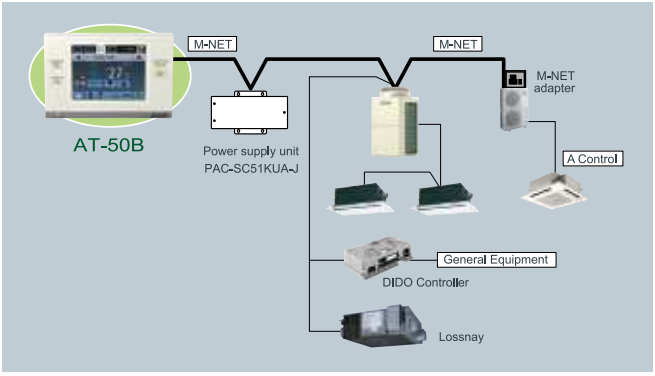
Advanced Touch controller AT-50B

Dual Set Point

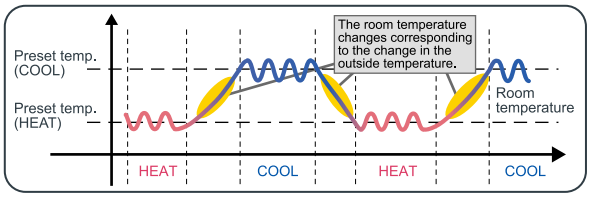
Dimensions: 180(W) x 120(H) x 30(D) mm
: 7-2/16(W) x 4-12/16(H) x 1-3/16(D) in.

- **Temperature will be displayed either in Centigrade in 0.5- or 1-degree increments, or in Fahrenheit, depending on the indoor unit model and the display mode setting on the remote controller.**
- **Dual set point**
  When the operation mode is set to the Auto (dual set point) mode, two preset temperatures (one each for cooling and heating) can be set. Depending on the room temperature, indoor unit will automatically operate in either the Cool or Heat mode and keep the room temperature within the preset range.
  *Please contact your Mitsubishi Electric sales office for details.

System structure



Operation pattern during Auto (dual set point) mode



Design

Backlit LCD (Liquid Crystal Display) Touch Panel

5-inch color LCD touch panel enables easy and simple operation.
The backlight lights up when the panel is touched, and lights off after certain period of time.
The touch panel displays the operation status of the units in GRID, LIST or in GROUP.

GRID (zoom-out) screen
Displays the operation status of all groups.

GRID (zoom-in) screen
Displays the detailed operation status of each group.

LIST screen
Displays the detailed operation status of each group with group name.

GROUP screen
Displays the detailed operation status of each group.
Sets group operations.

Functions

Three in One

The following three features are integrated into AT-50B.

- Control up to 50 indoor units from one location
- A weekly programmable timer, being able to control up to 50 indoor units
- Control up to 50 units/50 groups of air conditioners

Weekly and daily schedule

5 patterns of one day and 12 patterns of weekly schedule (16 settings max. per pattern).
Two types of weekly schedule can be set.

System changeover

Operation mode can be switched depending on indoor temperature setting and target temperature of each group or a representative indoor unit.

Functions

[Basic Functions]

- ON/OFF
- Operation mode switching
- Temperature setting
- Fan speed setting
- Airflow direction setting
- Louver setting

Night setback function

This function allows having a two-temperature setting to keep the desired room temperature when the units are not in operation and during the time this function is effective. The unit automatically starts heating (cooling) operation when the temperature drops below (rises above) the preset lower (upper) limit temperature. This is not only for comfort environment, but also for saving energy.

Main system controller/Sub system controller

AT-50B can be set to Sub System controller.
When connecting multiple system controllers, designate the system controller with many functions as the "Main", and set the system controllers with few functions as the "Sub".

Simple button arrangement

The F1 (Function 1) and the F2 (Function 2) button can be set as a run button of the following collective operation. (Setback/Schedule/Operation Mode/Temperature Correction/Remote Controller Prohibition)

Advanced Functions

□: Each unit ○: Each group ◎: Group or collective ×: Not available

Item	Description	Operations	Display
Permit / Prohibit	The ON/OFF, operation mode, setting temperature, fan speed, air direction, filter sign reset operations, and timer using the local remote controllers can be prohibited. Only ON/OFF and filter reset can be prohibited for the LOSSNAY group. *The settable items vary depending on the models.	◎	◎
Operation lock	The operation lock can be set to the input operation of AT-50B. Each button can be set. (Function Button 1, Function Button 2, Collective ON/OFF, Touch Panel) Each function can be set. (Operation mode, Setting temperature, Fan speed, Menu button) The password for the lock release can be set.	◎	◎
Error display	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed. * When an error occurs, the "ON/OFF" LED flashes. The operation monitor screen show abnormal icon over the unit. The error monitor screen shows the abnormal unit address and error code. The error log monitor screen shows the time and date, the abnormal unit address, error code and source of detection.	×	□◎
Ventilation (independent)	Switches the mode "Bypass/Heat recovery/Auto" for LOSSNAY groups.	◎	◎
Ventilation (interlocked)	The LOSSNAY will run in interlock with the operation of indoor unit. The mode cannot be changed. The LED will turn ON during operation after interlocking.	◎	◎
Temperature-set limitation	Batch-setting to temperature range limit at cooling, heating, and auto mode. This function cannot be used with the MA remote controller. (Depends on the indoor unit model.)	◎	◎
Specific mode operation prohibit (Cooling prohibit, heating prohibit, cooling/ heating prohibit)	When set as the main controller, operation of the following modes with the local remote controllers can be prohibited. When cooling is prohibited: Cooling, dry, automatic can not be chosen. When heating is prohibited: Heating, automatic can not be chosen. When cooling/heating is prohibited: Cooling, dry, heating, automatic can not be chosen.	◎	◎
External input (Emergency stop input, etc.)	The following input with level signals or pulse signals are available. Level signal: "Emergency stop input" or "Collective ON/OFF" Pulse signal: "Collective ON/OFF" or "Local remote controller prohibit/permit" One input can be selected from those above. * An external input/output adapter (PAC-YT51HAA-J (sold separately)) is required. Relays and DC power supply or other devices must be prepared at the site.	◎	◎
External output (Error output, operation output)	"ON/OFF" and "error/normal" are output with the level signal. * An external input/output adapter (PAC-YT51HAA-J (sold separately)) is required. Relays and DC power supply or other devices must be prepared at the site.	◎	◎
Checking the Gas Amount	Use this function to check for refrigerant leak from the outdoor unit. * When this function is used, the gas amount checking function of the outdoor unit cannot be used. This function is for CITY MULTI R2 and Y (PUMY is excluded.) series only.	□	□
Schedule operation	Weekly schedule setting up to 12 pattern is available. In one pattern, up to 16 setting of "ON/OFF", "Operation mode", "Set Temperature", "Fan speed", "Air flow direction" and "Permit / Prohibit local operation" can be scheduled. Two types of weekly schedule(Summer/Winter) can be set. Today's schedule setting up to 5 pattern in available.	○	○

* Depending on the installation conditions, power supply unit (PAC-SC51KUA) is required. Please contact your local distributor or MITSUBISHI ELECTRIC branch office for further information.

Centralized Remote Controller

Centralized controller AE-200E/AE-50E

Dimensions: 284(W) x 200(H) x 65(D) mm
: 11-5/32(W) x 7-27/32(H) x 2-9/16(D) in.

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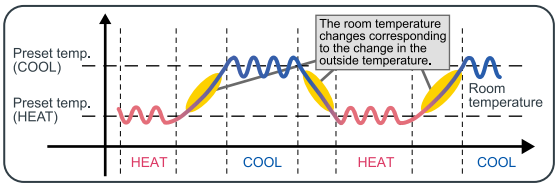
Control Screen for Power Consumption

Energy consumption of applicable area is displayed by the month, day, and hour. Energy consumption of two different units, groups and blocks can be compared. Fan operation time as well as energy consumption can be displayed.

Energy consumptions of air-conditioning equipment are ranked and displayed by individual air-conditioning equipment and by area, thus visualizing high-load components. Also, comparison of energy consumption with target electric energy is possible.

Operation pattern during Auto (dual set point) mode



- **By comprehensibly showing the energy consumption of air-conditioning equipment, it provides assistance in energy saving.**
  - Energy consumption of air-conditioning equipment by individual area is displayed using graphs for easier viewing.
  - Enables comparisons with the previous year's power consumption as well as with the target electric power, thus allowing users to check the operating state at a glance.
  - Floor layout is displayed on the 10.4-inch LCD touch panel, facilitating easier operation of air-conditioning equipment.
- **In an easy and flexible manner, an optimum system can be established according to the scale of facilities.**
  - Implements control on up to 50 indoor units of air-conditioning equipment.
  - By using three units of expansion controller "AE-50E/EW-50E", the centralized control is implemented for the maximum of 200 indoor units.
  - Connection with PC allows implementation of control on more than 200 indoor units via Web browser.*1

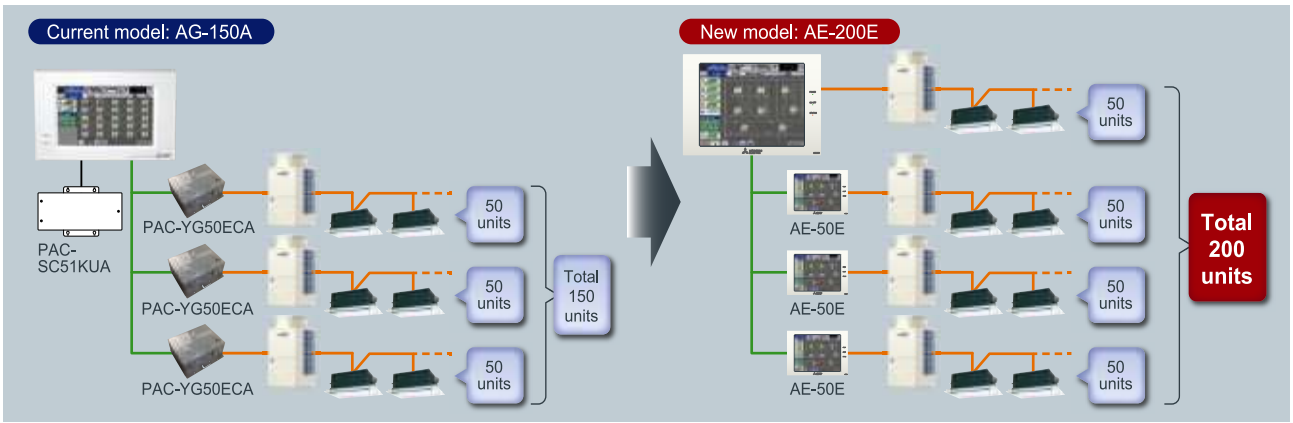
  *1. Please contact your local distributor for when the feature is supported.
- **Features for operating and monitoring the hot water heat pump are also available on CAHV, PWFY, and CRHV.*2**
  - Centralized batch control on CAHV, PWFY, and CRHV *2 is possible in addition to that on air-conditioning unit.

  *2. Please contact your local distributor for when these features are supported on CRHV.
- **Dual set point**

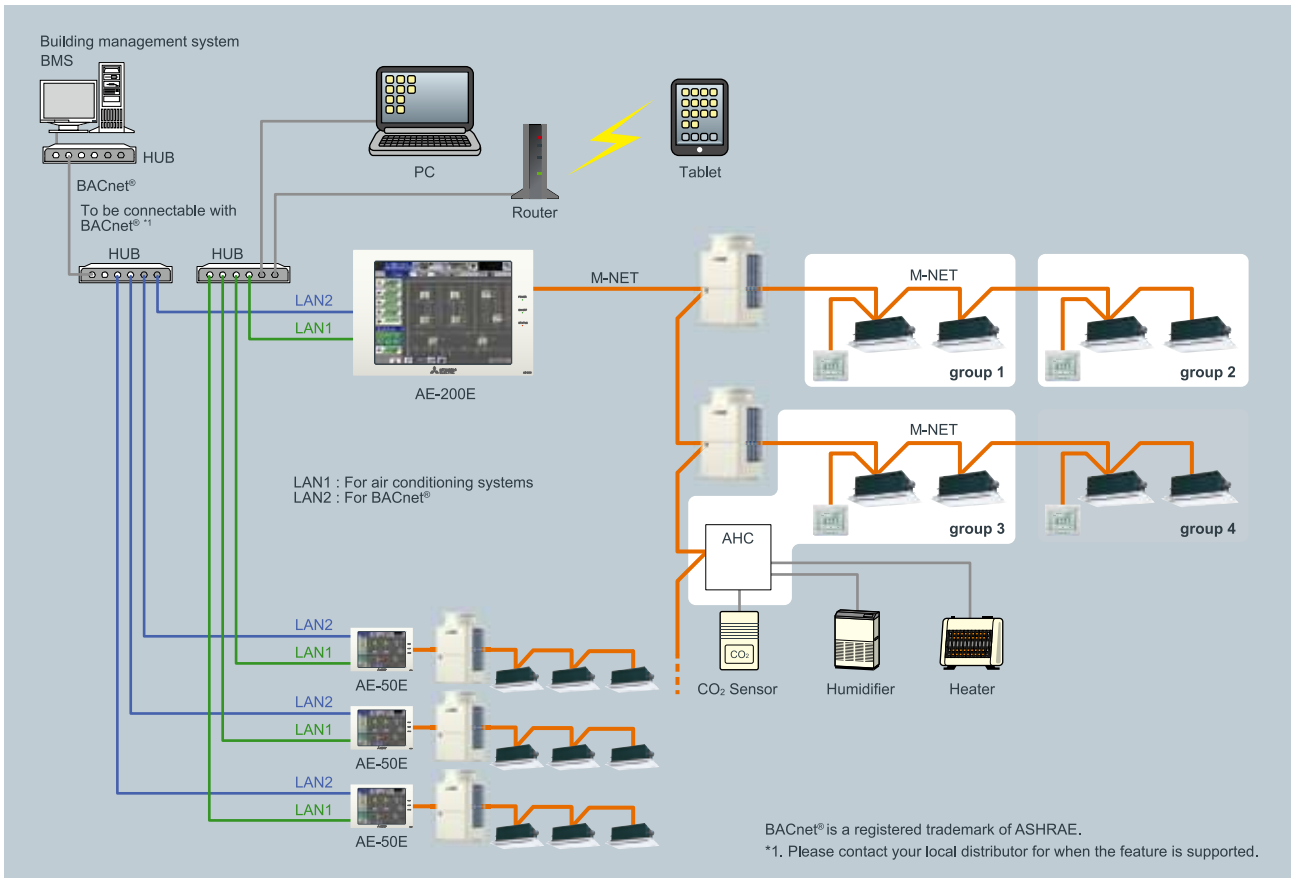
  When the operation mode is set to the Auto (dual set point) mode, two preset temperatures (one each for cooling and heating) can be set. Depending on the room temperature, indoor unit will automatically operate in either the Cool or Heat mode and keep the room temperature within the preset range.

  *Please contact your Mitsubishi Electric sales office for details.

Comparison in the number of connectable units



System Structure



Functions

□ : Each unit ○ : Each group ● : Each block △ : Each floor ◎ : Collective × : Not available

Item	Description	Operations	Display
Controllable number of unit	Up to 50 units/50 groups		
ON/OFF	ON and OFF operation for the air conditioning units and general equipment. (To operate general equipment, PAC-YG66DCA is required.)	○◎△●	○◎
Operation mode	Switches between several operation modes depending on the air conditioning unit. Air conditioning unit : Cool/Dry/Auto(*)/Fan/Heat LOSSNAY unit : Heat Recovery/Bypass/Auto CAHV, CRHV, Air To Water (PWFY) units : Heating, Heating ECO, Hot Water, Anti-freeze, Cooling(**) * Auto mode is for CITY MULTI R2 and WR2 series only. ** Only PWFY	○◎△●	○
Temperature setting	Cool/Dry : 19°C (67°F) -35°C (95°F) [14°C (57°F) -30°C (87°F)] Heat : 4.5°C (40°F) -28°C (83°F) [17°C (63°F) -28°C (83°F)] Auto : 19°C (67°F) -28°C (83°F) [17°C (63°F) -28°C (83°F)] The range of temperature depends on the air conditioning unit. [ ] in case of using middle-temperature on PDFY, PEFY-VML/VMR/VMS/VMH-by setting DipSW7-1 to ON. Yet, PEFY-P-VMH-E-F is excluded.	○◎△●	○
Fan speed setting	Models with 4 air flow speed settings : Hi/Mid-2/Mid-1/Low Models with 3 air flow speed settings : Hi/Mid/Low Models with 2 air flow speed settings : Hi/Low Fan speed setting (including Auto) varies depending on the model.	○◎△●	○
Air flow direction setting	Air flow direction angles, 4-angles or 5-angles Swing, Auto (Louver cannot be set)	○◎△●	○
Schedule operation	Weekly schedule can be set by groups based on daily operation pattern.	○◎△●	○
Permit/prohibit local operation	Individually prohibits operation of each local remote controller function. (ON/OFF, Operation mode, Set temperature, Filter sign reset, Air Direction*, Fan Speed*, Timer*) * This function depends on the model.	○◎△●	○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit only when the indoor unit is operating.	×	○
Error	When an error is currently occuring on an air conditioning unit, the afflicated unit and the error code are displayed.	×	□◎
Test run	This operates air conditioning units in test run mode.	○◎△●	○
Ventilation interlock	The ventilation unit (LOSSNAY) is able to automatically start its operation when operation of the interlocked indoor unit starts.	○◎△●	○
External input/output	By using optional external input/output adapter (PAC-YG10HA-E) you can set and monitor the following. Input : By level signal : "Batch ON/OFF", "Batch emergency stop" By pulse signal : "Batch ON/OFF", "Enable/disable local remote controller" Output : "ON/OFF", "Error/Normal"	◎	◎
Energy Management	Bar Graph : Indoor unit Electric Energy, FAN operation time, Thermo-ON time (TOTAL, Cooling, Heating) can be displayed hourly, daily and monthly. Line Graph : Outdoor temp., Room temp., Set temp. (Heating, Cooling) input from PAC-YG63MCA and temp. from AHC.	×	□○●
Advanced HVAC Controller (AHC)	The status of AHC can only be monitored.	×	○
New Smart ME contoroller	The status of sensor on this controller can be monitored.	×	○
Smartphone/Tablet	The specified Web browser on iOS and Android OS can monitor and operate AE-200E. *1	○	○
New Web design	The web screen design is renewed for user friendly interface. *1	○◎△●	○
Initial setting software	The initial setting can be configured without the connection of AE-200E. *1	×	×
Apportionment of power consumption	Apportionment of power consumption can be calculated on AE-200 without TG-2000A. *1	●	□●
BACnet® communication	ANSI/ASHRAE 135-2010 (ISO16484-5) is supported and approved by the BTL. *1	○	×

*1. Please contact your local distributor for when the feature is supported.

Centralized Remote Controller

Centralized controller EW-50E

NEW

Dual Set Point

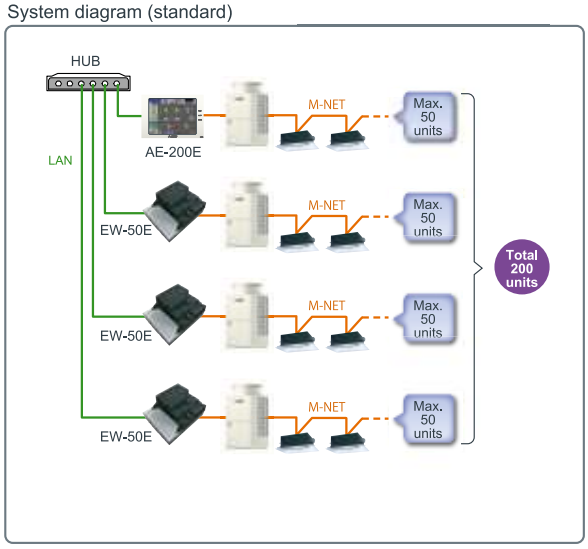
Dimensions: 209(W) x 172(H) x 92(D) mm
: 8-1/4(W) x 6-25/32(H) x 3-5/8(D) in.

Main Features

- **Available as the expansion controller for AE-200E**
  Connecting three EW-50E units to an AE-200E makes it possible to operate and monitor a maximum of 200 indoor units.
- **Apportioned electricity charge function**
  The amount of power consumed by the air conditioners is calculated with the use of AE-200E. The calculated data can be output to the PC via USB memory or LAN, and the charge report can be created with the use of the designated charge calculation tool.
  *The apportioned electricity charge function on AE-200E and TG-2000A cannot be used together.
  *To use the apportioned electricity charge function on AE-200E, check that the version of TG-2000A is 6.60 or later, even if the apportioned electricity charge function on TG-2000A is not used.
  *For other restrictions, refer to the Installation Manual and Instruction Book.

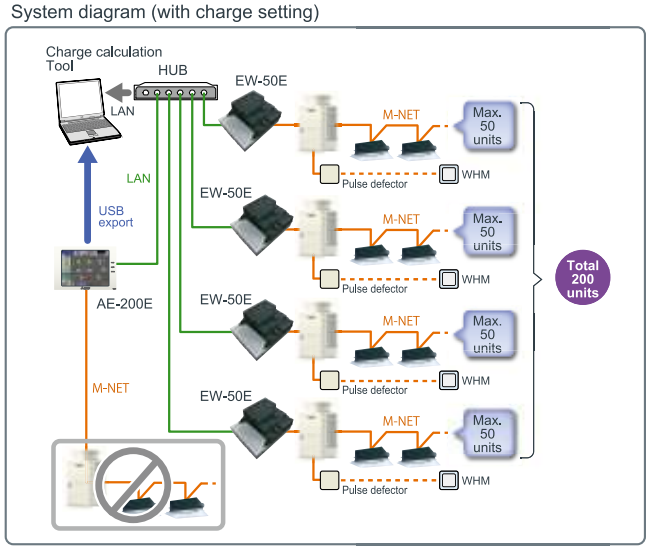
System Structure

System diagram (standard)



* When M-NET of AE-200E is not used, a maximum of four EW-50E units can be connected.

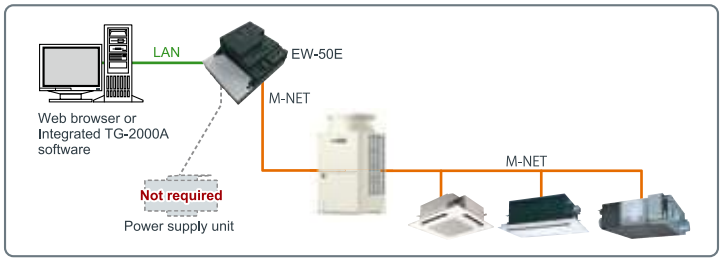
System diagram (with charge setting)



- **Enabled to operate and monitor air conditioners independently by using a PC**
  Even without an AE-200E, EW-50E is possible to monitor and operate air conditioners using a browser software*1. Via the Internet, air conditioners can be monitored and operated from a remote location. In addition, air conditioners in multiple buildings can be operated collectively.*2

* 1. The operation of this product has been confirmed on
Internet Explorer 8, IE9, IE10, and IE11, and on Oracle® Java Ver8.
Microsoft® Internet Explorer is a trademark or registered trademark of Microsoft Corporation in the United States and other countries.
Oracle® and Java® are trademarks or registered trademarks of Oracle Corporation, its subsidiaries, and related companies in the United States or other countries.
Company names and product names in this brochure may be trademarks or registered trademarks of the respective rights holder.

* 2. When connecting an EW-50E via the Internet, do not directly connect the EW-50E to the Internet.
Instead, always connect via a router via a VPN function that can ensure security.
To monitor the indoor units connected to EW-50E, use TG-2000A of Ver. 6.60 or later.



• **Manage air conditioner usage conditions**
It is possible to use a web browser to display the energy consumption of air conditioners in an easy-to-understand manner.

• **Operable without the transmission line power supply unit**
Because the EW-50E unit is equipped with a power supply function, power supply from a transmission line power supply unit is not necessary.
Since power supply from an outdoor unit is also not necessary, self-sustained operation is possible even when the outdoor unit system goes down. (If the power consumption factor exceeds 1.5, a power supply unit is required.)

• **Energy-saving control**
By adding an energy-saving control license (optional product), the set temperature can be changed automatically*1 based on the room temperature surrounding each air conditioner. Therefore, energy-saving control is possible without affecting comfort greatly.

* 1. This function changes the set temperature in units of +2°C for cooling and -2°C for heating by the specified time interval.
If the difference between the suction temperature and the set temperature is significant, it is possible to exclude it from the energy-saving subject.

Functions

* The functions and specifications are subject to change.

◎: By group or multiple groups ○: By group □: Batch only

Item	Remarks	Setting	Display
ON/OFF	Switches to ON or OFF air conditioners and general equipment.	◎	◎
Operation mode switching	Switches to cool, dry, auto, fan, or heat operation. * Depending on the unit, some modes are not available.	◎	○
Room temperature setting	The temperature can be set in the following range. The values inside the parenthesis are for indoor units for medium temperature. * Depending on the model, the setting temperature range differs. · Cooling/dry : 19°C to 35°C (4.5°C to 30°C) · Heating : 17°C to 28°C (17°C to 28°C) · Auto : 19°C to 28°C (17°C to 28°C)	◎	○
Set temperature 0.5°C increments	The temperature can be set and displayed in 0.5°C increments. * With some unit combinations, the temperature is set in 1°C increments.	◎	○
Fan speed setting	The fan speed can be set to 4 levels, 3 levels, 2 levels or automatic. * Available fan speeds differ depending on the unit.	◎	○
Air direction setting	Fixed swing in five levels or auto air direction can be set. * Available air directions differ depending on the unit.	◎	○
Prohibition of local remote controller operation	It is possible to disable the ability to use to local remote controller to run or stop, the operation mode, set temperature, filter sign reset, wind speed, wind direction and timer operation. * In the Lossnay group, only ON/OFF and filter reset can be disabled. * Disabling of the fan speed, air direction, and timer operation can be set for the PAC-SF50AT, PAR-36MA, PAR-F30ME, and PAC-YT52CR models.	◎	○
Room temperature display	Displays the suction temperature of the indoor unit.	—	○
Error display	Displays the current error content together with the address.	—	◎
Schedule operation	Today/weekly/weekly by season/yearly Setting content: ON/OFF, operation mode, set temperature, disable local remote controller, air direction/fan	◎	○
Energy management	Displays the power consumption* or operating hours. * Requires an optional part.	—	◎
Ventilator operation (solo)	Group operation can be possible for free plan Lossnay units only. * The above group operation mode includes auto ventilation, heat exchange, and normal ventilation.	◎	○
Ventilator operation (interlocked)	Free plan Lossnay units and indoor units can be interlocked and operated together. * At this point, air volume can be operated but the ventilation mode cannot be selected.	◎	○
External input (timer connection, emergency stop input, etc.)	Using a level signal or pulse signal, it is possible to input the following. Level signal: Emergency Stop Input, Batch ON/OFF, and Demand Input. Pulse signal: Batch ON/OFF or Operation Disable/Enable * Requires an external power supply and separately sold external I/O adapter (PAC-YG10HA). Of the above inputs, only one input can be selected.	□	—
External output (error output, operation output)	Using the level signal, ON/OFF and Error/Normal are output. *Requires an external power supply and separately sold external I/O adapter (PAC-YG10HA).	—	□
Web browser	Monitor/operation, failure, filter sign monitoring, schedule setting, interlocked control setting (option), energy saving control setting (option), energy saving peak cut setting (option), set temperature range restrictions, other	◎ *1	◎ *1
Filter reset	Filter sign reset	○	○
Connectable location	Centralized system transmission line: Connectable Recommended Indoor and outdoor transmission line: Connectable	—	—

* The functions and specifications differ depending on the connected equipment and model.
* Electric energy can be proportionally divided using the EW-50E alone.
But the apportioned electricity charge function requires an AE-200E or TG-2000A.

■Notes
* 1. Some items do not support the multi group setting and display.
* 2. Use only items for which the unit has the function.

■Connectable equipment: Free plan direct expansion system air conditioner
Inverter air conditioner for facility
Package air conditioner for facility (the AW control model can be connected using an M control compatible indoor unit)
A Control Mr. Slim (Can be connected using an M-NET adapter or special outdoor unit)
Kirigamine room air conditioner (Requires a system control interface or M-NET control interface)
Free plan Lossnay/Lossnay with heating and humidification
Independent humidification unit *2
Environmental measuring controller, metering measurement controller, general interface

Centralized Remote Controller

Centralized controller EB-50GU-J

EB-50GU-J (without display)

• Dimensions:9-7/8 (W) x 8-9/16 (H) x 3-7/8 (D) in.
:250 (W) x 217 (H) x 97.2 (D) mm

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The Web Server Function enables Remote Operation or Scheduling Via a Web Browser on a Personal Computer!
Up to 50 indoor units can be controlled!

Web Browser

Enables monitoring and operation of indoor units using a PC with Microsoft® Internet Explorer (Ver.8 or Ver.9)

*When connecting to the Internet, please use the VPN (Virtual Private Network).

Using "Dial-up Connection"

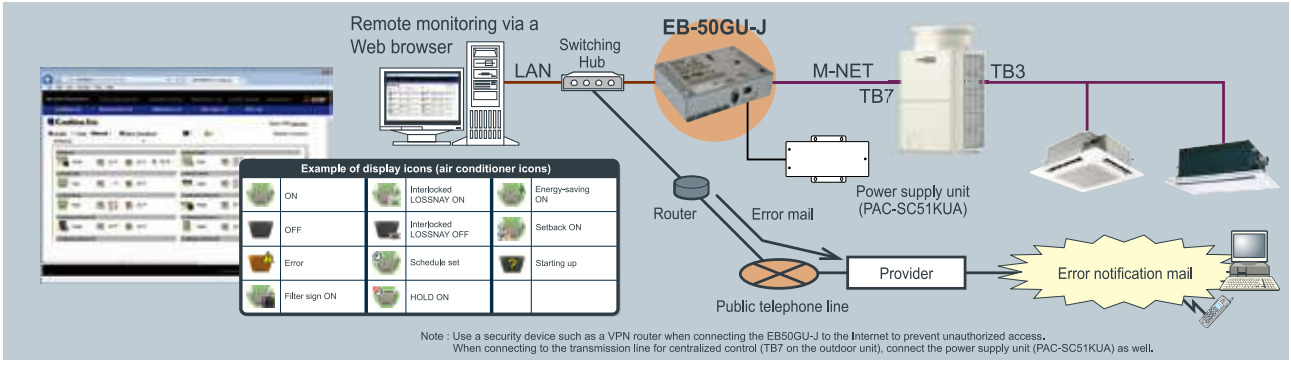
- Enables monitoring and operation from a remote place
- Enables error notification by e-mails to a PC or to a mobile phone

□:Each unit ○:Each group ●:Each block △:Each floor ◎:Collective ×:Not available

Function	Description	Operations	Display
ON / OFF	ON and OFF operation for the air conditioner units	○●◎	○◎
Mode selection	Switches between COOL/DRY/FAN/AUTO/HEAT	○●◎	○
Temperature setting	The temperature can be set within the following range. Cool/Drying: 67°F - 95°F/19°C - 35°C Heat: 40°F - 83°F/4.5°C - 28°C Auto (single set point): 67°F - 83°F/19°C - 28°C Auto (dual set points) [Cool] Same as the set temp. range for Cool mode. [Heat] Same as the set temp. range for Heat mode. *The settable temperature ranges and items vary depending on the indoor and outdoor unit models.	○●◎	○
Air flow direction setting	Air flow direction angles, 4-angle or 5-angle Swing, Auto (Louver cannot be set)	○●◎	○
Timer operation / Schedule	Annual/Weekly (5 types)/today schedule can be set for each group of air conditioning units. Optimized startup setting is also available.	○●◎	○
Permit / Prohibit function	Individually prohibit operation of each local remote control function	○●◎	○
Indoor unit intake temperature	Measures the intake temperature of the indoor unit only when the indoor unit is operating.	×	○
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed.	×	□
Test run	This operates air conditioner units in test run mode.	○◎△●	○
Ventilation interlock	Operation of indoor groups or general equipment can be interlocked by the change of state (ON/OFF, mode, error of indoor groups and general equipment).	○	○
AHC status	Displays the status of input and output ports of each Advanced HVAC CONTROLLER (AHC).	×	□
Energy Use Status	On the Energy Use Status screen, the energy-control-related status, such as electric energy consumption, operation time, and outdoor temperature, can be displayed in a graph. Operators can check the detailed status of given indoor units by specifying the date to display the data per group, block, or unit address.	×	□○●

*NOTE: Operation and displayed content vary depending on the indoor unit model.

System Structure (image)

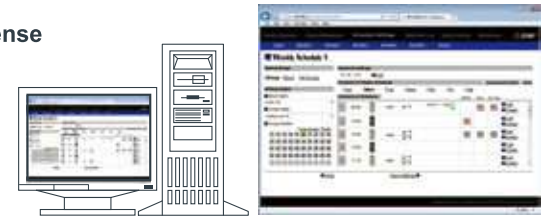


Note : Use a security device such as a VPN router when connecting the EB50GU-J to the Internet to prevent unauthorized access.
When connecting to the transmission line for centralized control (TB7 on the outdoor unit), connect the power supply unit (PAC-SC51KUA) as well.

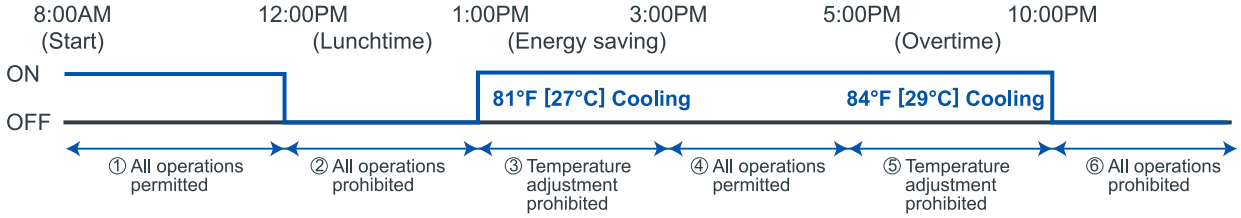
Annual / Weekly Schedule

Enables Weekly and Annual scheduling with a registering license

- The operations that can be scheduled for air conditioning unit group: ON/OFF/Optimized Start, Mode, Set Temp, Air Direction, Fan Speed, and Prohibit Remote Controller operation
- For annual schedule, it is possible to set 50 day-long settings up to 24 months into the future.



Scheduling example in the office



Up to 12 operation settings per day in 1-minute increment

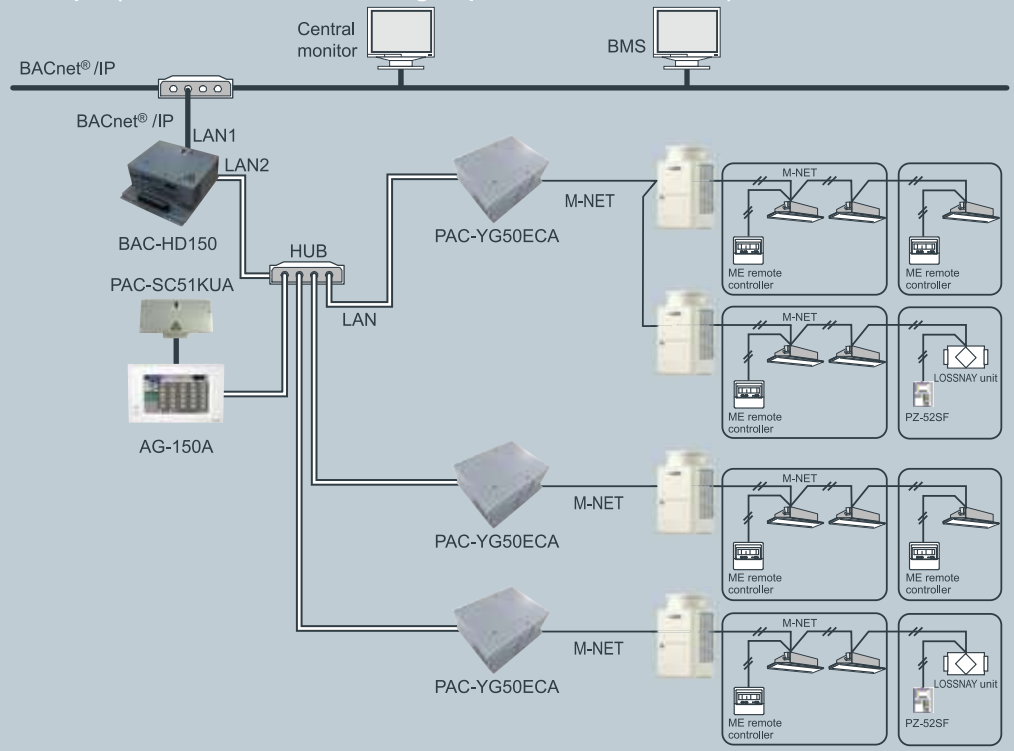
BMS Interface
BACnet Controller

BACnet® (BAC-HD150)

CITY MULTI can easily combine into a Building Management System (BMS) via the BACnet® and M-NET adapter BAC-HD150. BACnet® is an opened transmission protocol widely used at BMS, and related equipment control. CITY MULTI is therefore compatible with large-scaled BMS via BACnet®.

BAC-HD150 can control up to 50 units/groups (including LOSSNAY).
Up to 150 units/groups (including LOSSNAY) can be controlled from one BAC-HD150 with three expansion controllers PAC-YG50ECA. (50 units/PAC-YG50ECA)
When the dual-set-point function is used, no expansion controllers can be connected, and only up to 50 units/groups can be controlled from each BAC-HD150.

System example (Connection of 150 units / groups with PAC-YG50ECA)



BACnet and M-NET adapter

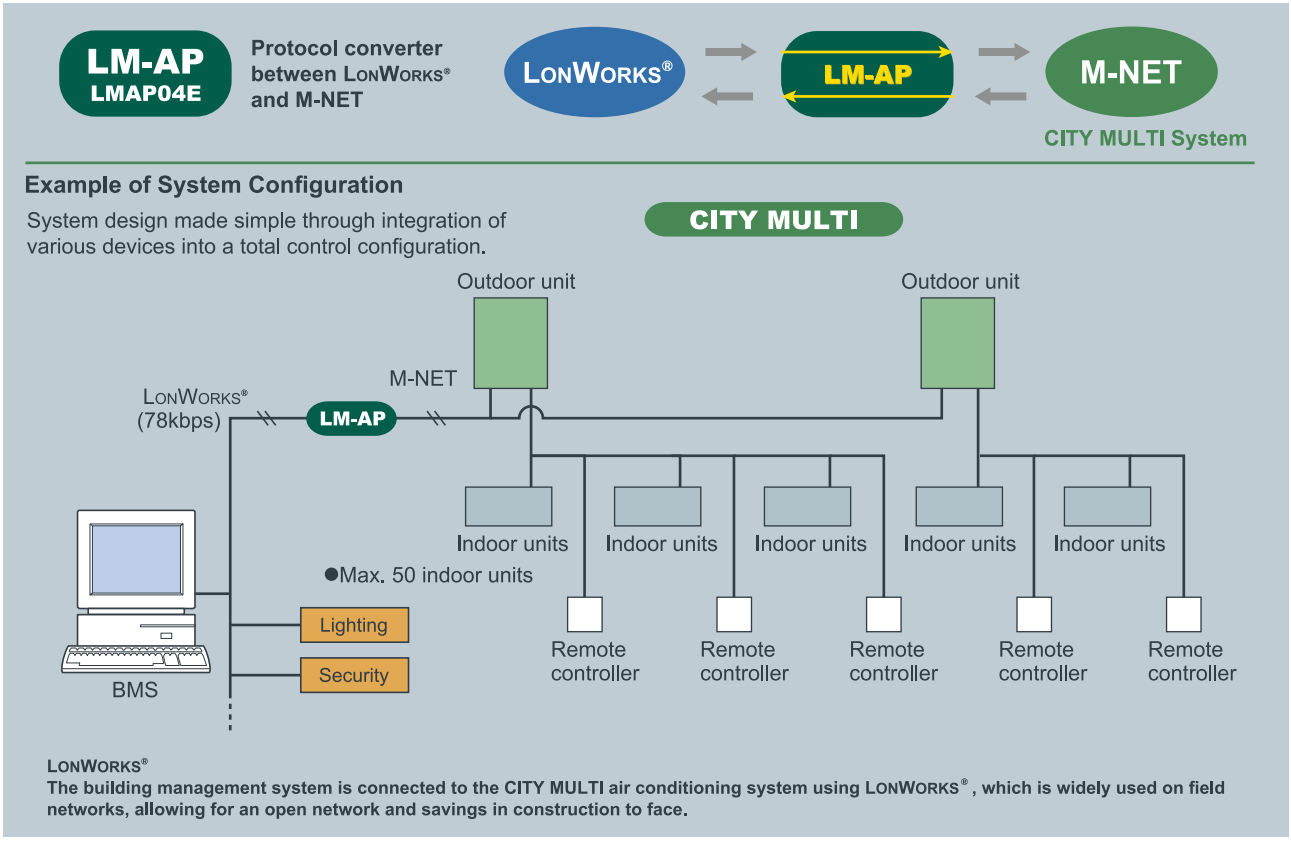
FUNCTION	CONTENT
Operation	
ON/OFF	Switches between ON and OFF
Mode	Cool/Dry/Heat/Auto/Fan
Fan Speed	Low-Mid1-Mid2-Hi
Airflow Direction	Horizontal- 60°-80°-100°swing
Set Temperature	Cooling 19-35°C [67-95°F], Heating 4.5-28°C [40-83°F], Auto 19-28°C [67-83°F]
Filter Sign Reset	Normal/Reset
Permit/Prohibit	ON/OFF, Mode, Filter sign reset, Set temp.
Forced OFF	Release/Effective
Monitoring	
ON/OFF	Switches between ON and OFF
Mode	Cool/Dry/Heat/Fan
Fan Speed	Low-Mid1-Mid2-Hi
Air Direction	Horizontal- 60°-80°-100°swing
Set Temperature	Cooling 19-35°C [67-95°F], Heating 4.5-28°C [40-83°F], Auto 19-28°C [67-83°F]
Filter Sign	Normal/Reset
Permit/Prohibit	ON/OFF, Mode, Filter sign reset, Set temp.
Indoor Temperature	-
Alarm Signal	Normal/Abnormal
Error Code	2 Character code- Indicates all unit alarms
Communication State	Normal/Abnormal

BMS Interface
LON Works

LonWorks® (LMAP04E)

CITY MULTI can easily combine into a Building Management System (BMS) via the LonWorks® and M-NET adapter LMAP04. LonWorks® is an opened transmission protocol widely used at BMS, and related equipment control. CITY MULTI is therefore compatible with large-scaled BMS management via LonWorks®.

One LM ADAPTER unit can connect up to 50 Groups/50 indoor units.
Using a single LonWorks® adapter (LM-AP), you can connect up to a maximum of 50 indoor units.



LonWorks®
The building management system is connected to the CITY MULTI air conditioning system using LonWorks®, which is widely used on field networks, allowing for an open network and savings in construction to face.

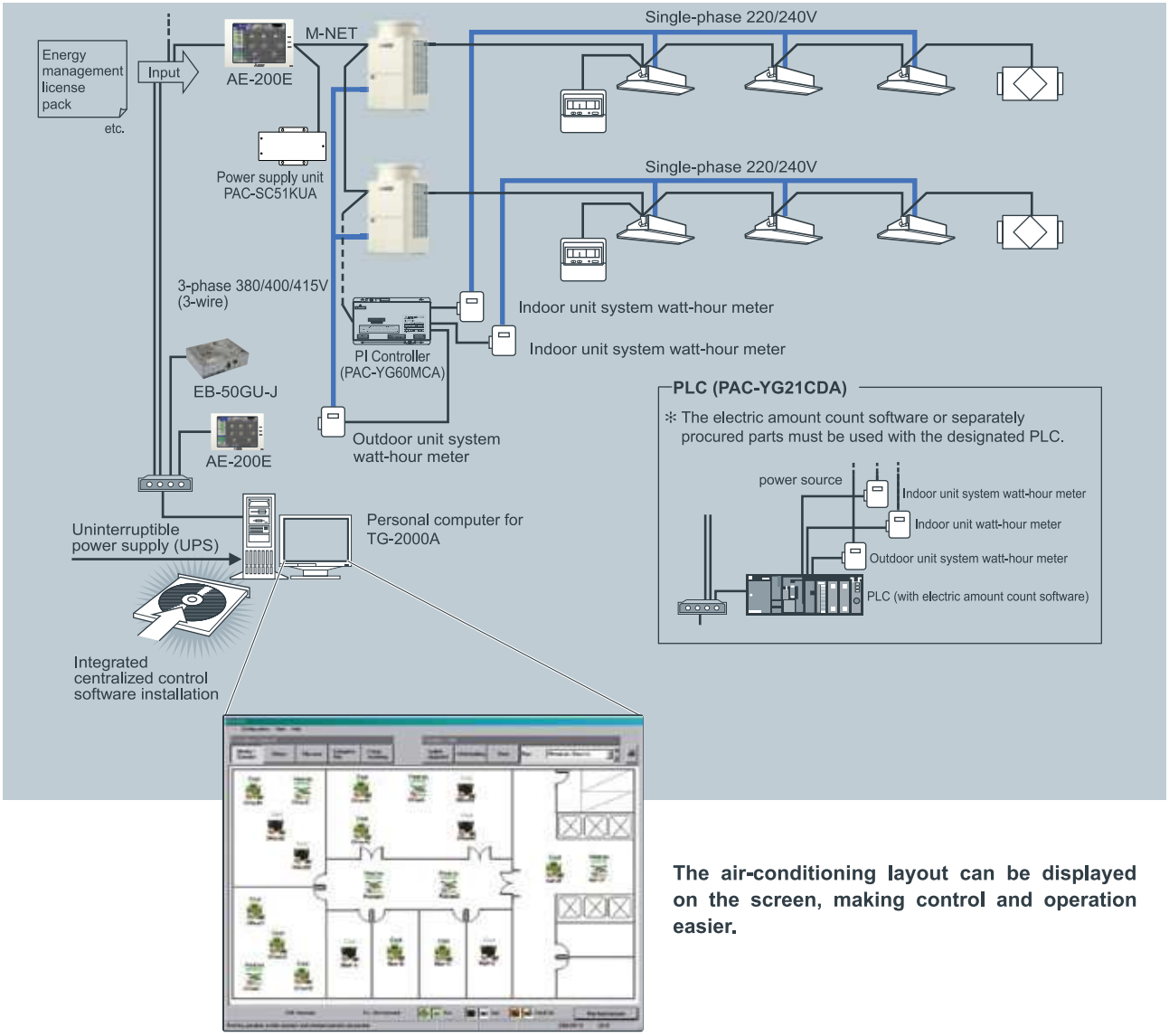
LonWorks® INTERFACE

FUNCTION	CONTENT
Control	
ON/OFF	Switches between ON and OFF
Mode Operation	Cooling/Drying/Heating/Auto/Fan
Setpoint Adjustment	Cooling 19-35°C, Heating 4.5-28°C, Auto 19-28°C
Fan Speed Control	Lo-Mi1-Mi2-Hi
Permit/Prohibit	ON/OFF, Mode, Setpoint
Emergency Stop	-
Monitoring	
ON/OFF	Switches between ON and OFF
Mode	Cooling/Drying/Heating/Auto/Fan
Setpoint	Cooling 19-35°C, Heating 4.5-28°C, Auto 19-28°C
Fan Speed	Lo-Mi1-Mi2-Hi
Permit/Prohibit	ON/OFF, Mode, Setpoint
Alarm State	-
Room Temperature	-10°C~50°C
Thermo ON/OFF	ON/OFF

BMS Software
TG-2000A

Integrated centralized control software TG-2000A

Example of Basic System Configuration



The air-conditioning layout can be displayed on the screen, making control and operation easier.

Effective use of TG-2000A

Multiple air conditioning charges in multiple buildings can be calculated. The power apportionment percentage data and apportioned power rate can be calculated for each unit, and can be output as a CSV file.

For example, installing TG-2000A to the system in the headquarters makes it possible to control AE-200E, AE-50E, EW-50E, AG-150A, or EB-50GU-J units that are used in branch offices. (Version 6.60 or later)

for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

The Air Conditioning & Refrigeration Systems Works acquired ISO 9001 certification under Series 9000 of the International Standard Organization (ISO) based on a review of Quality management for the production of refrigeration and air conditioning equipment.

ISO Authorization System
The ISO 9000 series is a plant authorization system relating to quality management as stipulated by the ISO. ISO 9001 certifies quality management based on the "design, development, production, installation and auxiliary services" for products built at an authorized plant.

FM33568 / ISO 9001;2008

The Air Conditioning & Refrigeration Systems Works acquired environmental management system standard ISO 14001 certification.

The ISO 14000 series is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
Registered on March 10, 1998.

EC97J1227 051

⚠Warning

■ Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
- Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
- It may also be in violation of applicable laws.
- MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

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