DAIKIN

Perfecting the Air
Kenyamanan Tanpa Batas

- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the user's manual carefully before using this product. The user's manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have enquiries, please contact your local importer, distributor and/or retailer.

AUTHORIZED DEALER

Cautions on product corrosion

1. Air conditioners should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the outdoor unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the sea shore, contact your local distributor.

<Prerequisites for Using MARUTTO>

- To use MARUTTO, you will need the control gateway (MARUTTO edge) and a Wi-Fi router. The purchase of a service agreement is also necessary to use a variety of related applications.
- A preliminary meeting is required before use of this product, so please contact the authorized representative at the planning stage.

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Specifications, designs and other content appearing in this brochure are current as of October 2024 but subject to change without notice.

0800 1 081 081
DAIKIN CONTACT CENTER

Jam Beroperasi:
Senin - Jumat: 07:00 - 19:00 WIB
Sabtu - Minggu & Libur Nasional: 07:00 - 17:00 WIB

PT DAIKIN AIRCONDITIONING INDONESIA
Menara Astra 7th & 8th Floor, Jl. Jenderal Sudirman Kav. 5-6,
Kel. Karet Tengsin, Kec.Tanah Abang, Jakarta Pusat, DKI Jakarta - 10220
Telp : +6221 8665 6886 I Website : www.daikin.co.id

• **SERVICE CENTER : Jakarta Selatan**, Telp. : 021-2782 5545 I **Samarinda**, Telp. : 0541-252 2889 • **WORKSHOP: Cirebon**, Telp. : 0231-8817 512 I **Banjarmasin**, Tlp. : 0511-3258 969 I **Aceh**, Tlp. : 0651-7318 036 I **Lombok**, Tlp. : 0370-7843 231 I **Jambi**, Tlp. : 0741-3066 790 I **Padang**, Tlp. : 0751-896 2684 • **TRAINING CENTER : Sunter**, Telp. : 021-650 5030 • **BRANCH : Bekasi**, Telp. :021-2945 0585 I **Tangerang**, Telp. : 021-5314 1195 I **Bandung**, Telp. : 022-522 5150 I **Semarang**, Telp. : 024-7660 3221 I **Yogyakarta**, Telp. : 0274-551 321 I **Surabaya**, Telp. : 031-503 1138 I **Denpasar**, Telp. : 0361-900 5514 I **Makassar**, Telp. : 0411-805 2691 I **Palembang**, Telp. : 0711-573 2282 I **Pekanbaru**, Telp. : 0761-561 139 I **Medan**, Telp. : 061-4200 8866 I **Manado**, Telp. : 0431-719 1199 I **Batam,** Tlp. : 0778-4171 445

TÜVRheinland CERTIFIED
Management System ISO 9001:2015
www.tuv.com ID 9105084313

AMTIVO ISO 27001 Information Security Management
UKAS MANAGEMENT SYSTEMS 8289

DAIKIN

DIDPCNID2325



Empowering HVAC Management Seamless Control, 24/7

MARUTTO is an all-in-one, cloud-based management service that offers real-time control and monitoring, advanced analytics, and customized support to address HVAC lifecycle concerns.





Easily controlled from any device[*1]

MARUTTO

Sends collected and stored data to the cloud

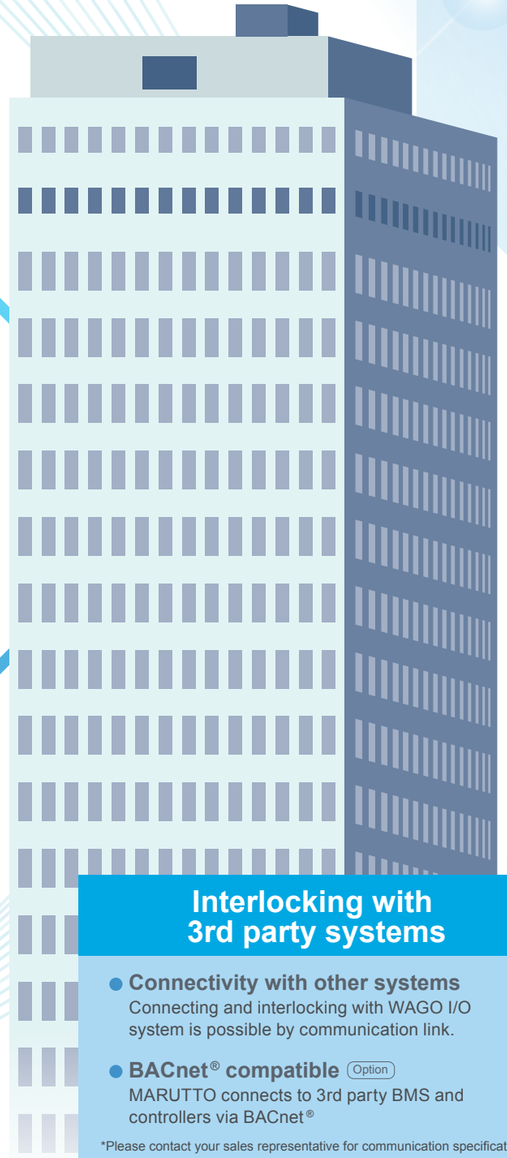
Can be operated and managed remotely

Wi-Fi router

Control gateway

MARUTTO edge





Air Conditioner

Indoor units:
128 units (2 lines)
Max. 512 units (8 lines) with additional DIII plus adaptor and DIII plus adaptor slot

Ventilation

Lighting

Sensor

Other equipment and devices

- Security equipment
- Fire alarm
- Watt-hour meter (via I/O module)
- Applied equipment

Interlocking with 3rd party systems

- **Connectivity with other systems**
  Connecting and interlocking with WAGO I/O system is possible by communication link.
- **BACnet® compatible** Option
  MARUTTO connects to 3rd party BMS and controllers via BACnet®

*Please contact your sales representative for communication specifications.

See here for details Video Overview of MARUTTO Services ▶

Note: *1 Operation is only available when the control gateway is connected to the Internet. See page 14 for details.

Remote monitoring and control

Multi-Device Support P.3
Enables operation anytime and anywhere using a smartphone or tablet

Multi-Site Management P.3
Supports unified facility management even for equipment in remote locations

Layout View P.4
Provides easy locating of equipment and intuitive operation

Map View P.4
Enables prompt identification of business locations where problems are occurring

Optimize energy usage

Energy Visualization P.5
Provides graphs of energy consumption to uncover inefficient operation

Demand Control Option P.6
Reliably cuts power peaks without sacrificing comfort

Operation Data Output Function P.7
Easily obtains equipment information without having to visit the local site

PPD Function Option P.7
Reduces workload by automatically calculating air conditioning for each tenant

Coming soon **Energy-Saving Simulation** P.8
Estimates potential for operational improvements

Centralized control

Interlocking Control of Devices P.9
Organizes unique comfort and convenience functions through various combinations

User Administration Function P.10
Sets management authority individually for each zone and user

Schedule Control P.10
Automates facility management throughout the year

Peace of mind service maintenance

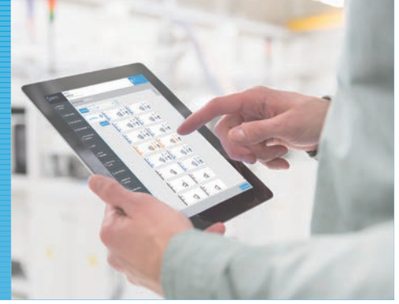
Error Notification Email P.11
Immediately detects even small errors to enable a quick response

Social Media Support Option P.11
User friendly facilities management with instant error notification and remote operation

Remote Emergency Operation Option P.12
Shortens the air conditioning downtime in the event of a sudden breakdown

Remote monitoring and control

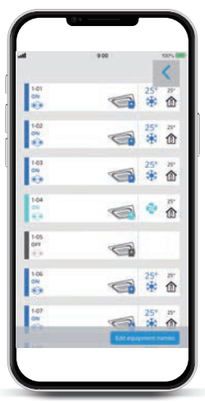
Easy operation from a remote location improves work efficiency



Multi-Device Support

Enables operation anytime and anywhere*1 using a smartphone or tablet

Equipment can be checked and managed from a remote location or during a business trip using your portable device or computer. This makes daily facility management easier and more convenient.



Facility Managers

- Manage while traveling or working from home
- Monitor with a tablet during inspections
- Manage from desk without going to the control room

Monitor/ Manage



Monitor/ Manage

Users

- Check by smartphone to see if equipment is turned off
- Operate using their own computer
- Change operation schedule at any time

Note: *1 Operation is only available when the control gateway is connected to the Internet. See page 14 for details.

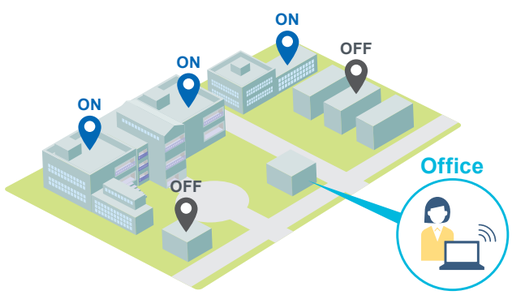
Multi-Site Management

Supports unified facility management even for equipment in remote locations

Unified facility management, such as temperature and equipment management, is possible for the entire building. You can remotely operate equipment at a large site or from a remote location to greatly reduce management time.

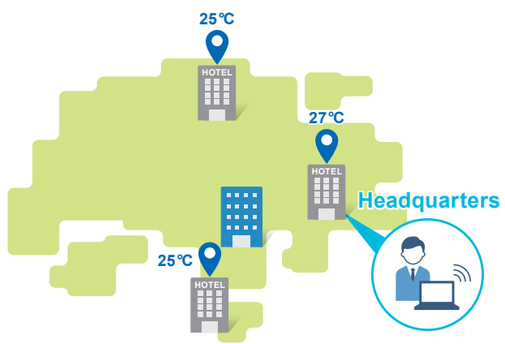
University campuses, factories, etc.

Unified facility management at office can be performed when buildings are scattered over the premises



Hotel, retail chain stores, etc

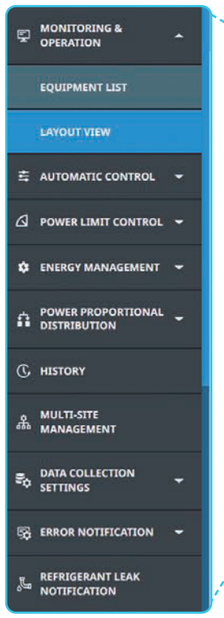
Multiple buildings extending over a wide area can be **centrally managed from the headquarters**

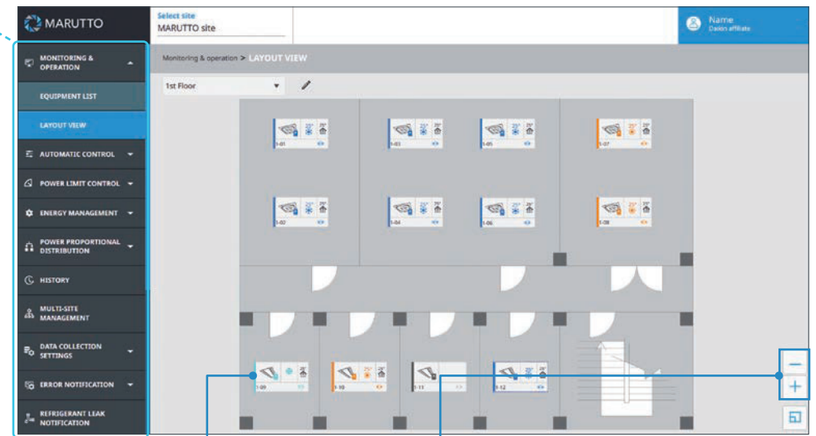


Layout View

Provides easy locating of equipment and intuitive operation

The floor plan visibly displays the locations where equipment and devices are installed and uses easy-to-understand icons and color coding for optimal management.





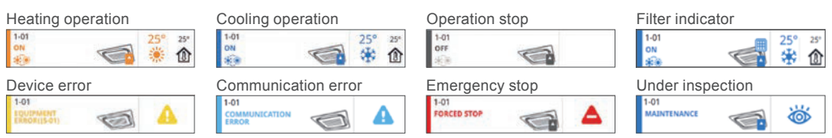
Simple Icon Layout
Installed locations and equipment status are displayed with simple icons.

Screen Ratio Adjustment
Easily zoom in for detailed checks and zoom out for an overall view with adjustable screen scale ratio.

Depending on the settings, users, including tenants, can also see their own management area.

Instantly recognize the operating status with icon display

Equipment status, such as for heating and cooling operations, device errors, and emergency stop are displayed in different colors for instant status recognition.



Sort function

A list of equipment with the same conditions, such as operating status, can be displayed.

Map View

Enables prompt identification of business locations where problems are occurring

The multiple business locations being managed are displayed on a map for instant equipment status recognition and swift problem response.

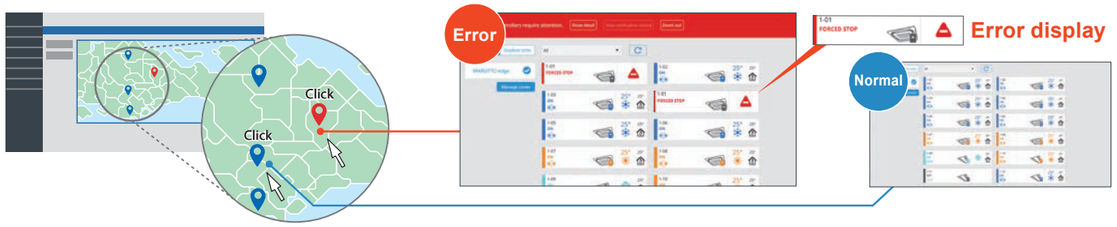
Only for multi-site management

Business locations and equipment status

When there is an equipment error at a business location, a red marker appears. Displayed in blue for normal operations.

Monitoring and control of each business location

Click the marker for equipment details at each location. Perform diverse monitoring and settings, check error equipment and error details.



Optimize energy usage

Analysis of operation data supports energy and power savings



Energy Visualization

Provides graphs of energy consumption to uncover inefficient operation

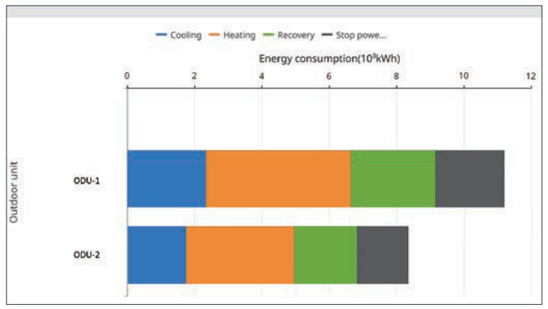
Visualization of energy consumption (electricity, gas, water, etc.) helps identify areas and time slots of high consumption along with inefficient operation in order to eliminate waste and reduce electricity bills. Energy consumption can be checked for each individual building as well as for multiple buildings.

This function can be used by people with “company manager” or higher authority.

Energy consumption



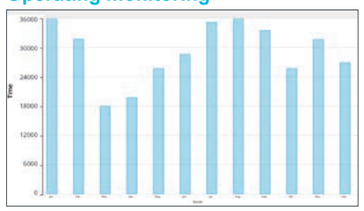
Outdoor unit consumption



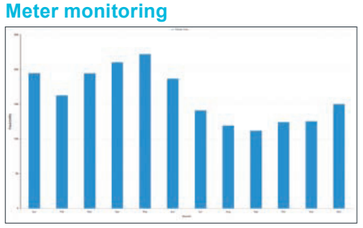
Thermal environment



Operating monitoring



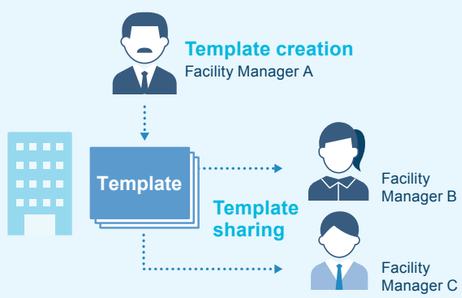
Meter monitoring



Obtaining Energy Consumption Data Easily

- Operational efficiency improves since data can be easily obtained remotely without having to visit the local site.
- Facility managers can share data output templates and output the same data.

*Once a template is set up, there is no need to set it up for the next output.



Demand Control

Reliably cuts power peaks without sacrificing comfort

Option

Demand control is used to reduce the maximum power demand and to help reduce contract power charges. Fine-grained power peak cutting is performed by saving the capacity of air conditioners in stages and setting priority of areas subject to demand control.

This function does not guarantee power demand values.

Saves power consumption while reducing loss of comfort

- Predict the power consumption after 15 or 30 minutes and gradually reduces the power consumption of air conditioning so that the target power value (power peak) is not exceeded.
- Reduce power in stages by up to 8 levels/groups according to area priority.
- Maintain comfort while minimizing deterioration of the indoor environment, compared to intermittent operation control (ON/OFF control).

Control power consumption with three measures

- Thermo-Off of indoor unit
- Set temperature shift of indoor unit
- Outdoor unit capacity limit

Record control history data for power demand

In addition to confirming the daily demand history, the control history for each 15 or 30 minutes can be saved for the last two years, which can be used for verifying demand effects.

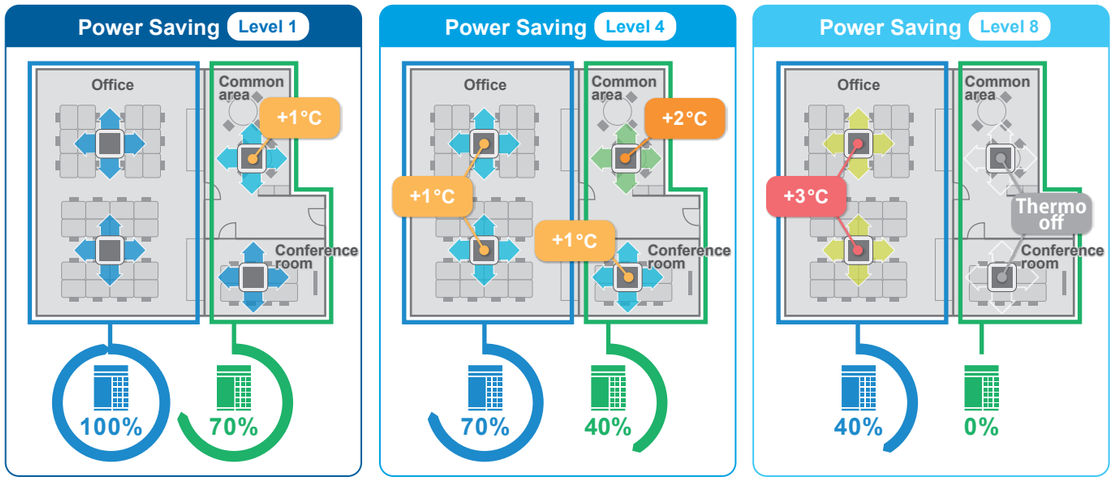
Control details can be changed and confirmed even at distant locations

Demand control results and settings can be checked and verified, and target values can be changed without visiting the site to save management labor.

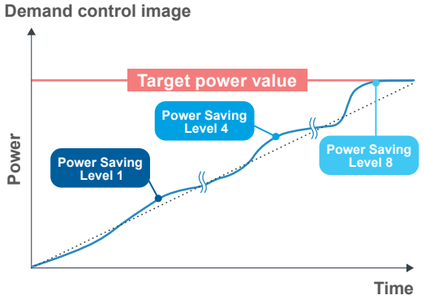
<Office case>

For cooling operation

Office ····· Priority High
Conference room ····· Priority Middle
Common area ····· Priority Low



Demand control image

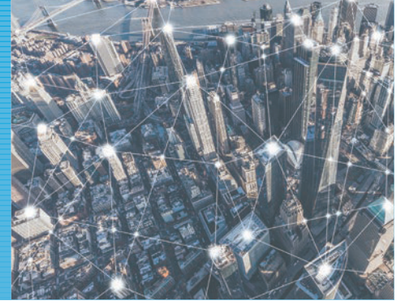


As the power saving level increases, the power consumption reduction effect also increases.

Power saving level	High priority area		Middle priority area		Low priority area	
	Outdoor unit capacity	Indoor unit set temperature control	Outdoor unit capacity	Indoor unit set temperature control	Outdoor unit capacity	Indoor unit set temperature control
Level 1	100%	—	70%	—	70%	+1 °C
:	:	:	:	:	:	:
Level 4	70%	+1 °C	40%	+1 °C	40%	+2 °C
:	:	:	:	:	:	:
Level 8	40%	+3 °C	0%	Thermo off	0%	Thermo off

Optimize energy usage

Easy daily management with convenient functions



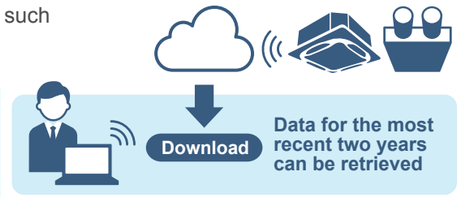
Operation Data Output Function

Easily obtains equipment information without having to visit the local site

Operating data can be retrieved remotely from managed devices, such as air conditioners, ventilation systems, and various sensors.

It becomes easy to verify energy savings and identify problems

Maintenance and inspection plans can be created from operation and error history data



Data for the most recent two years can be retrieved

PPD Function

Reduces workload by automatically calculating air conditioning for each tenant

Option

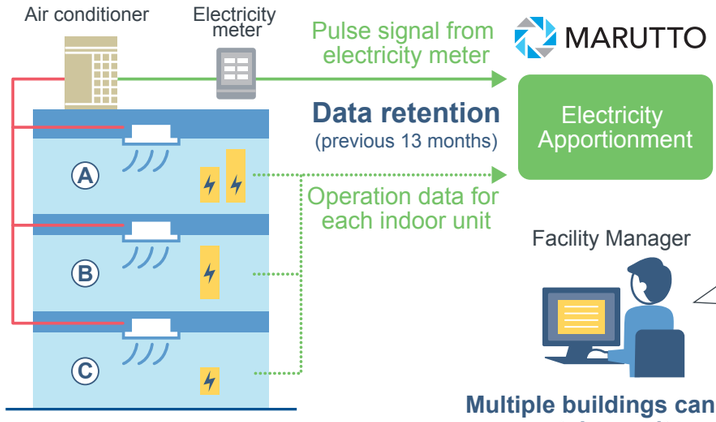
The power consumption of each indoor unit is easily obtained from your computer without having to visit the local site. The tenant report function automates the creation of invoices and reduces the trouble of calculating air conditioning fees.

*PPD: Power Proportional Distribution

Electricity Apportionment

Provides function for proportional aggregation

Electric power consumption is automatically allocated for each indoor unit according to operating conditions



Streamlines management work by managing multiple buildings remotely without having to visit the local site

Energy-Saving Simulation

Estimates potential for operational improvements

Coming soon
Support scheduled for early 2024.

Improvements that emerge through energy visualization, such as auto turn-off of air conditioners in unattended rooms and review of temperature settings, can be simulated to estimate their potential for reducing electricity bills.

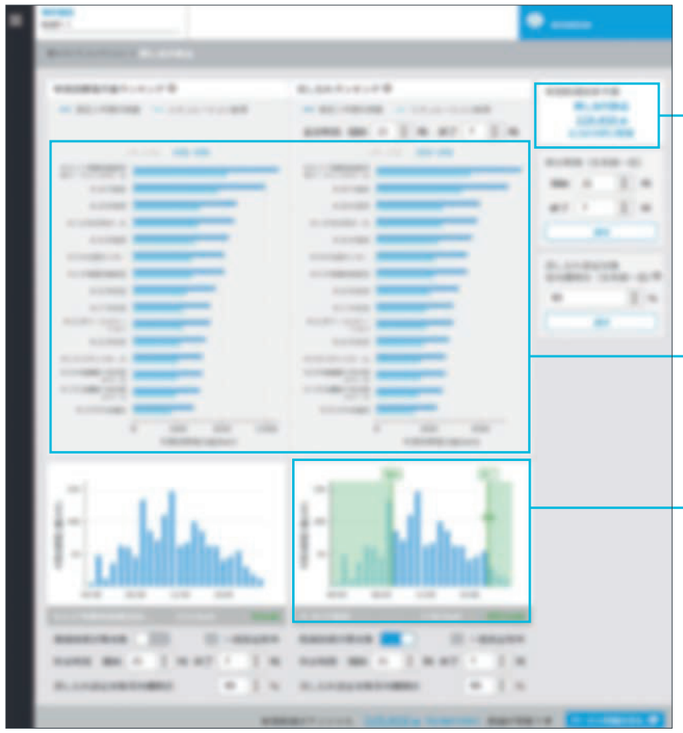
This function can be used by people with “company manager” or higher authority.

Simulation of auto turn-off equipment

The potential to reduce power consumption and electricity bills by setting a time slot to prevent forgetting to turn off the air conditioner (time slot when operation is prohibited) can be simulated based on the usage history of the air conditioner over the previous year, and the results can be displayed.

*The time slots for auto turn-off can be set for each system.

Other simulation items ■ Setpoint limit ■ Demand value limit



Reduction potential through operational improvements

Ranking of air conditioner power consumption by system

An arbitrary time auto turn-off is set

*Image is under development. Actual product and specifications may differ.

Centralized control

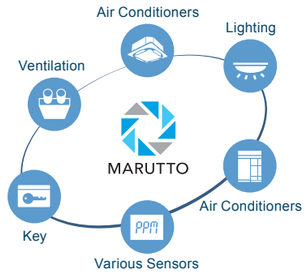
Balancing for both energy savings and comfort through precise control



Interlocking Control of Devices

Organizes unique comfort and convenience functions through various combinations

New convenient functions are equipped that would not be possible with a single device.
By building our own unique system, we can provide optimal device management for our customers.



Interlocking devices enhance building value



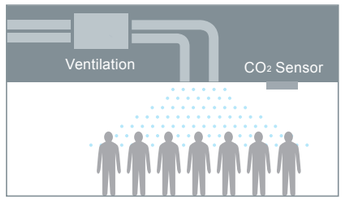
Example 1 Automates control of ventilation in line with CO_2 concentration

Interlocking control of ventilation and CO_2 sensors

Indoor CO_2 concentration is detected, and the air volume for the ventilation changes according to CO_2 concentration to provide optimal ventilation.



Air volume increases when the number of people (CO_2 concentration) increases

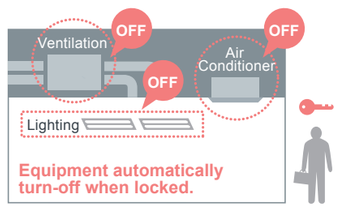


Example 2 Air conditioning, lighting, and ventilation automatically turn off when the door is locked.

Interlocking control of air conditioners, lighting, ventilation, and key card management systems*1

The lock signal from the key card management system automatically stops the air conditioning, lighting, and ventilation in the same room.
It is an effective system to save electricity when people have left a room and forgotten to turn off electrical devices.



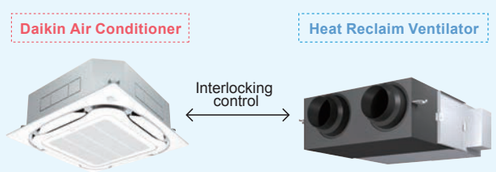


Note: *1 Separate connections are required for the lighting control and key card management systems.

More comfort and energy saving by interlocking Daikin air conditioner and Heat Reclaim Ventilator

- Sensors built into Daikin air conditioners and ventilation collect a variety of data for even greater interlocking control performance.

*Includes CO_2 sensors for ventilation systems and outdoor temperature sensors.



User Administration Function

Sets management authority individually for each zone and user

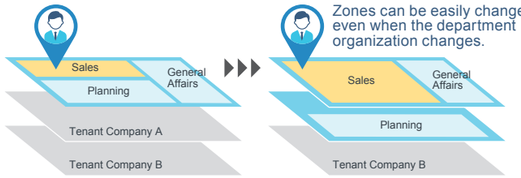
Operations and settings can be performed for each zone when zones are registered for each tenant or equipment item.
Also, management functions can be allocated to each user for efficient management.

Up to 100 zones

Up to 1,000 users per building

Set for Each Zone

Settings can be made to meet the needs of each tenant and department.

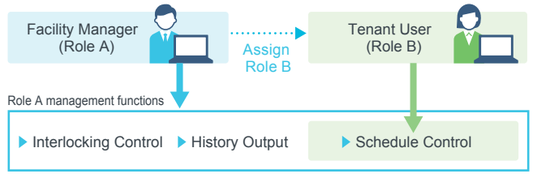


Zone type

- Zone by area ····· Zones are set for each area such as tenant or department
- Zone by model ····· Zones can be set for each type of equipment such as air conditioner, lighting, and ventilation equipment

Set for Each User

The management of functions can be divided by user



Benefit to Facility Managers

Entrusting day-to-day operation management to users reduces management work hours.

Benefit to Tenant Users

Schedule changes can be made on their own without asking the facility manager.

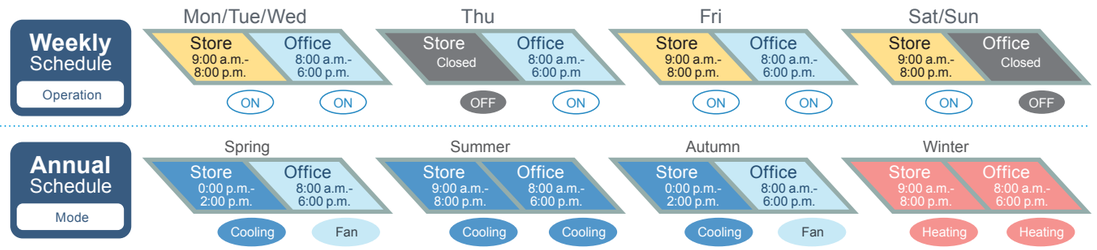
Schedule Control

Automates facility management throughout the year

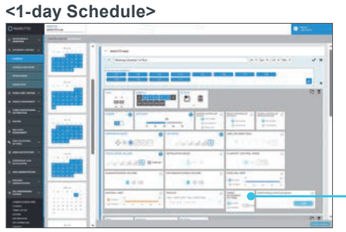
Schedule control automates daily equipment operation, including lighting, throughout the year.

Schedule settings can be made in 1-minute increments for each zone | **Up to 10 programs per zone**

- Different temperature settings and business hours for each tenant are supported
- Operation status of multiple buildings can be checked remotely



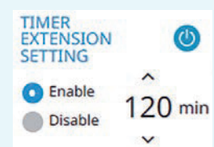
<1-day Schedule>



TIMER EXTENSION SETTING

This function reduces wasteful power consumption by automatically turning off power when people leave conference rooms and break rooms unattended.

The operating time of the air conditioner can be set in 30-minute increments from 30 to 180 minutes.





Items that can be controlled



- Start / Stop
- Remote controller restriction
- Fan speed
- Airflow direction
- Setpoint limit
- Ventilation mode
- Analog
- Interloking control program

Peace of mind service maintenance

Minimize downtime with reliable service



Error Notification Email

Immediately detects even small errors to enable a quick response

When a breakdown or trouble occurs, email notifications provide immediate information on equipment status. This service helps speed repairs and reduce equipment downtime.

When an error is detected in a managed device, an email is automatically sent to the relevant parties.

Enables quick detection of breakdowns

Detects even hard-to-notice errors



Provides email notifications to support response from anywhere

Enhance your peace of mind while you're away



Streamlines facility management

Effortless error management, even without on-site facility managers



Day and Time Slot Can Be Set for Emails

When the facility manager is not present, emails to his or her representative are possible by setting the desired day and time.

Social Media Support

Option

User friendly facilities management with instant error notification and remote operation

When away from the office, it may be difficult to access your computer to check for email notifications. In order to enhance your communication options, MARUTTO provide social media support for abnormal events.

For typical cases

- Necessity for on-site situation confirmation
- Time-consuming downtime



For app notifications



- Notifications provide immediate insights into error details remotely: Error Code, Equipment name, Date and Time, Site / Location
- One-click access to error code solutions, support, and MARUTTO web site.
- Reduce downtime through rapid issue resolution







LINE

*LINE and the LINE logo are registered trademarks of LINE Corporation.

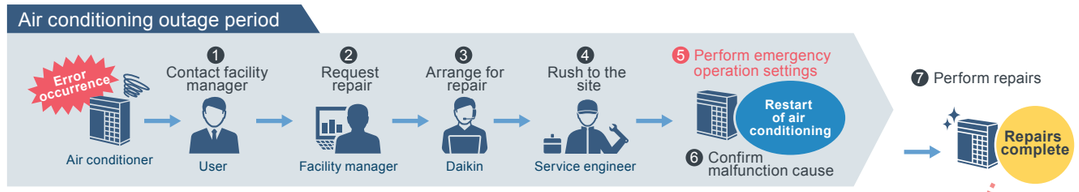
Remote Emergency Operation

Option

Shortens the air conditioning downtime in the event of a sudden breakdown

Empower yourself to perform emergency operation settings when your air conditioner malfunctions. No more waiting for service engineers-this means significantly reduced downtime due to malfunctions.

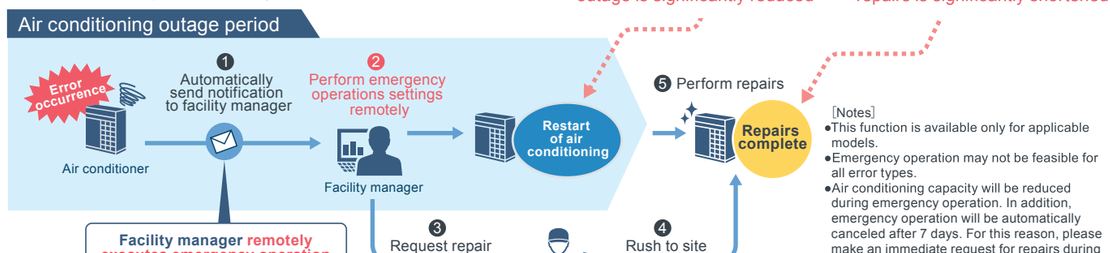
For typical cases It may take **several days** from the detecting of an error to performing emergency operations...



MARUTTO Response from error detection to emergency operation takes just a **few minutes**

Period of air conditioning outage is significantly reduced

Time needed to complete repairs is significantly shortened



[Notes]
- This function is available only for applicable models.
- Emergency operation may not be feasible for all error types.
- Air conditioning capacity will be reduced during emergency operation. In addition, emergency operation will be automatically canceled after 7 days. For this reason, please make an immediate request for repairs during emergency operation.

MARUTTO Steps for Using Service

This service requires a service agreement along with the purchase of equipment that includes control gateway.

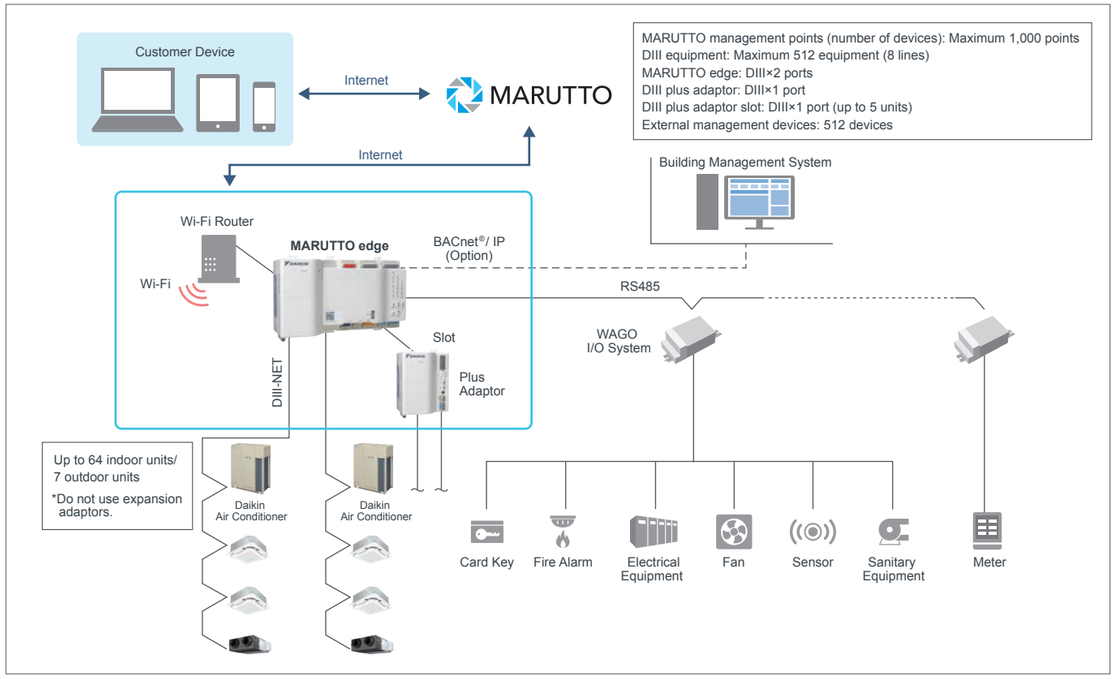
(Please contact your sales representative for details.)



MARUTTO Function List (as of November 2023)

Category	Content	Basic Package	Options	Function / Service Details
Remote monitoring and control	Multi-Device Support	●		Equipment can be checked and managed remotely from a remote location or during a business trip by using a smartphone, computer, or tablet.
	Multi-Site Management	●		Equipment at multiple facilities located on large premises or in remote locations can be centrally managed.
	Layout View	●		Equipment layout is visibly displayed on the floor plan for intuitive operation. This enables optimal management according to the installed locations. *A separate fee is charged for creating the floor plan.
	Map View	●		Multiple business locations being managed are displayed on a map. Because equipment status at each business location can be instantly recognized, a speedy response is possible when a problem occurs.
Optimize energy usage	Energy Visualization	●		Visualization of energy consumption (electricity, gas, water, etc.) helps identify areas and time slots of high consumption along with inefficient operation as a means to eliminate waste and reduce electricity bills.
	Demand Control		●	Air conditioning power consumption is gradually suppressed to prevent it from exceeding the set target power value. Demand control is performed while maintaining comfort.
	Operation Data Output Function	●		Operation data for the most recent two years of managed equipment can be retrieved remotely. The data can be used for energy-saving management and maintenance planning.
	PPD Function		●	Electric power and gas consumption amounts are automatically allocated to each indoor unit according to operating conditions. This lessens the burden of calculating air conditioning charges for each air conditioner and tenant.
	Coming soon Energy-Saving Simulation	●		Improvements that emerge through energy visualization, such as auto shut-off of air conditioners in unattended rooms and review of temperature settings, can be simulated to estimate their potential for reducing electricity bills.
Centralized control	Interlocking Control of Devices	●		Combining air conditioners and sensors has created unique and convenient functions, and this has led to optimal equipment management for customers.
	User Administration Function	●		Operations and settings can be performed for each tenant or equipment item. Also, management functions can be allocated to each user for efficient management.
	Schedule Control	●		In addition to air conditioning, schedules can control the operation of lighting and other equipment to automate daily equipment operation throughout the year.
Peace of mind service maintenance	Error Notification Email	●		When an equipment error occurs, the error details are sent to pre-registered email addresses. A request for a repair can also be performed online from the URL in the email body.
	Social Media Support		●	User friendly facilities management with instant error notification and remote operation.
	Remote Emergency Operation		●	When air conditioners break down, customers can remotely enter the emergency operation settings themselves. Because of this, the period during which air conditioners are stopped due to a breakdown can be significantly shortened.
Interlocking with 3rd party systems	Connectivity with other Systems	●		Connecting and interlocking with WAGO I/O system is possible by communication link. *Interface equipment is required.
	BACnet® Compatible		●	MARUTTO connects to 3rd party BMS and controllers via BACnet®

MARUTTO System Overview



MARUTTO (standard specifications)

Common Name	Control gateway	Plus adaptor (sold separately)	Slot (sold separately)
Item Name	MARUTTO edge	DIII plus adaptor	DIII plus adaptor slot
Model Name	DGE601A51	DGE601A52	DGE601A53
Power Supply	AC100-240V 50/60Hz	AC100-240V 50/60Hz	Power supply from DIII plus adaptor
Power Consumption	23W	23W	—
Usage Environment	-10 to 50°C 85% or less	-10 to 50°C 85% or less	-10 to 50°C 85% or less
External Dimensions (Width x Height x Depth)	230 × 146 × 81.2 (mm)	97.2 × 146 × 81.2 (mm)	25.2 × 146 × 64.2 (mm)
Weight	0.97kg	0.69kg	0.13kg

User Device / Operating Environment Conditions

	Computer	Tablet		Smartphone	
OS	Windows10 Home (64bit)	Android™ 10.0, 11.0, 12.0	iPad OS 15, 16	Android™ 10.0, 11.0, 12.0	iOS 15, 16
Web Browser*	Google Chrome	Google Chrome	Safari	Google Chrome	Safari

*Internet Explorer cannot be used.
The Internet environment and portable device must be provided by the customer.

Please contact your local sales office for compatible models.

About Security for MARUTTO

1 Provision of a secure communication environment

- MARUTTO has a structure that separates the air conditioning management network and the customer's OA network and uses a system configuration that does not affect the customer's OA network.
- SSL communication encrypts communication between MARUTTO edge and the MARUTTO cloud and between MARUTTO cloud and the customer's portable device to protect the system from the threat of being seen or tampered with by third parties.

2 Spoofing prevention through identity authentication

- Digital certificate technology is used to prove the authenticity of MARUTTO edge and MARUTTO cloud servers and prevents impersonation by third parties.
- Third-party impersonation is prevented by authenticating users with the requirement of an ID and password when the website is used to access.

3 Data Protection

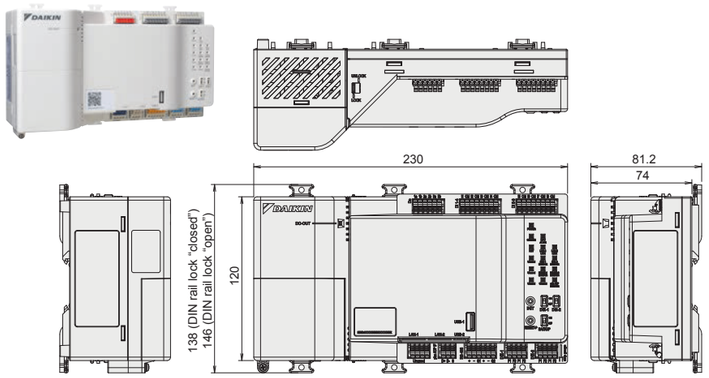
- Data encryption and strict control over access protects MARUTTO edge and the cloud servers that make up the MARUTTO system from the threat of being seen or tampered with by third parties.
- Cloud servers are continually being backed up to provide quick recovery in the event of a failure.

4 Reliable software security updates

- The MARUTTO system operates software to detect tampering and malware, and the system is continually being monitored to protect against being destroyed by malware.
- The MARUTTO system performs diagnostics and countermeasures against software vulnerabilities and regularly updates the system with new software.

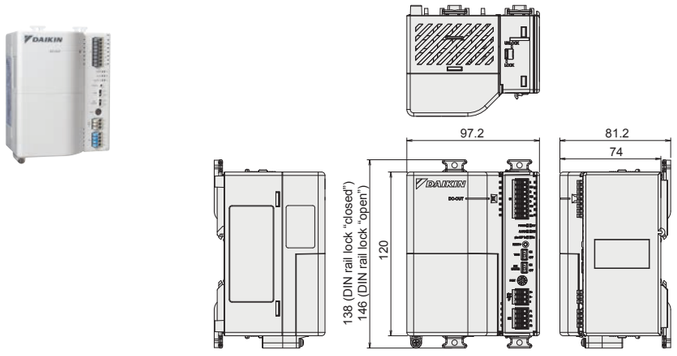
External appearance / dimensions [Unit: mm]

MARUTTO edge
DGE601A51



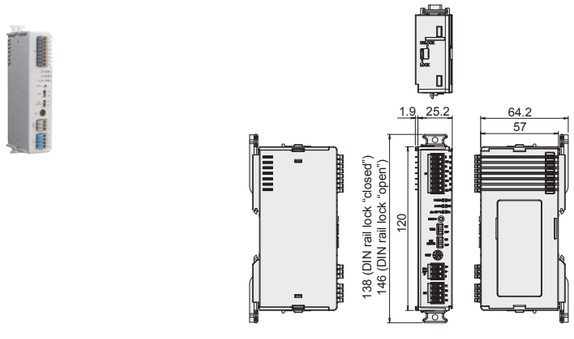
	Port	Specifications
DIII-NET	2 Ports	DIII-NET (up to 128 indoor units)
LAN Port 1	1 Port	Network (100BASE-TX)
LAN Port 2	1 Port	For connection to other companies (for BACnet®) *Future support
RS485 Port 1	1 Port	General-purpose remote I/O device connection (Di, Do, Ai, Ao, Pi)
RS485 Port 2	1 Port	For connection with other companies (for Modbus RTU) *Future support
Di (Pi)	8 Ports	Emergency stop signal input only (port 1) Contact signal input (ports 2 to 8) Pulse input (ports 2 to 8)
Do	3 Ports	Contact signal output (ports 1 to 3)
DIII Plus Adaptor Interface	___	DIII Plus Adaptor 1 connectable unit

DIII plus adaptor
DGE601A52



	Port	Specifications
DIII-NET	1 Port	DIII-NET (up to 64 indoor units)
Di (Pi)	4 Ports	Contact signal input (ports 1 to 4) Pulse input (ports 1 to 4)
DIII Plus Adaptor Slot	___	DIII Plus Adaptor Slot Up to 5 devices can be connected

DIII plus adaptor slot
DGE601A53



	Port	Specifications
DIII-NET	1 Port	DIII-NET (up to 64 indoor units)
Di (Pi)	4 Ports	Contact signal input (ports 1 to 4) Pulse input (ports 1 to 4)

MEMO

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