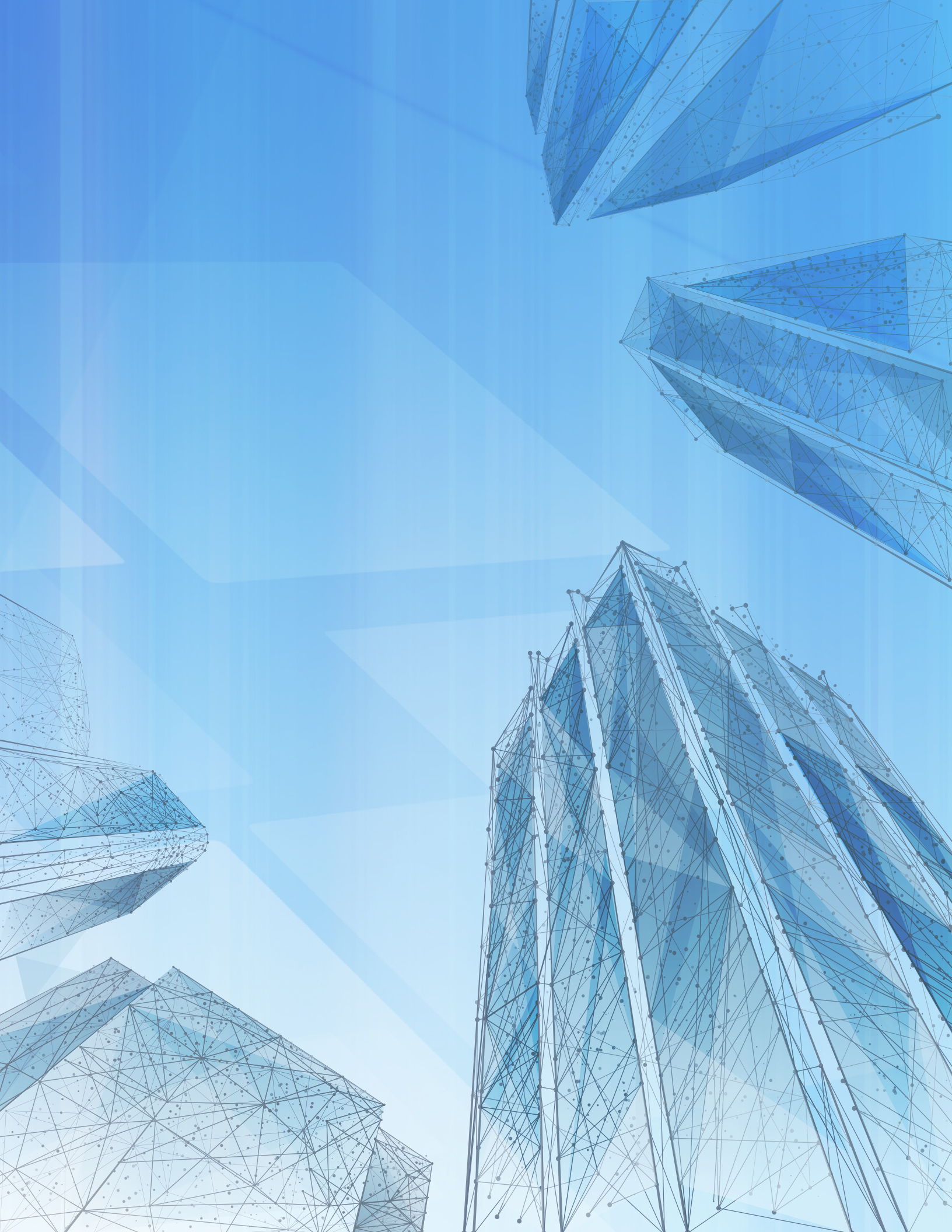
DAIKIN

touch intelligent Manager

iNTELLIGENT TOUCH MANAGER

ONE FOR ALL

ADVANCED MULTI-ZONE CONTROLLER



intelligent Touch Manager

The *intelligent Touch Manager* (*iTM*) is an advanced multi-zone controller that controls and monitors the Daikin *VRV* system. The *iTM* can also provide a cost-effective mini Building Management System (BMS) solution to integrate and control third-party devices through optional software and hardware. If a BMS already exists, the *iTM* can be used as a BACnet™ gateway interface for BMS integration with the *iTM BACnet* Server Gateway Option.

Easy Operation and Configuration

» Intuitive user interface with 10.4" LCD touch screen

» Flexible screen views includes the icon view, list view and layout view

» Easy engineering with use of the Preset Tool and USB port to upload setup information

Advanced Control Logic

» Independent Cool and Heat setpoints or Single setpoint in the occupied period

» Independent Setback setpoints in the unoccupied period

» Weekly Schedule with Optimum Start and Timed Override

» Auto Changeover with configurable methods

Facility Management and Billing

» Remote Web access (HTML 5)

» Automatic Error and Alert emails

» Tenant Billing with the *iTM* PPD option

» Demand Control capabilities to set setpoint shift, control thermo-on/off or outdoor unit capacity based upon a demand signal or schedule setting

Mini BMS Solution with Software and Hardware Options

» Interlock and Emergency Stop for facility management

» DI, DO, AI, AO points integrated via the WAGO® I/O System

» *BACnet* points (AI, AO, AV. BI, BO. BV, MSI, MSO, MSV) integrated with the *iTM BACnet* Client Option

BACnet Server Gateway Option

» Direct connection to the *VRV* system using the *iTM* as a gateway

» Individual device ID assigned to each indoor unit group and outdoor unit

» Seamless control logic integration between the *iTM* and BMS

» Greatly reduces the need for BMS integrator programming

Built-in Service Tool with Remote Access

» Operation data are stored in the *iTM* for the last 5 days:

  – Indoor unit and outdoor unit operation data

  – *BACnet* Client objects

  – *WAGO* I/O system data

» Operation data can be exported through a USB drive or through the *iTM* web browser remotely

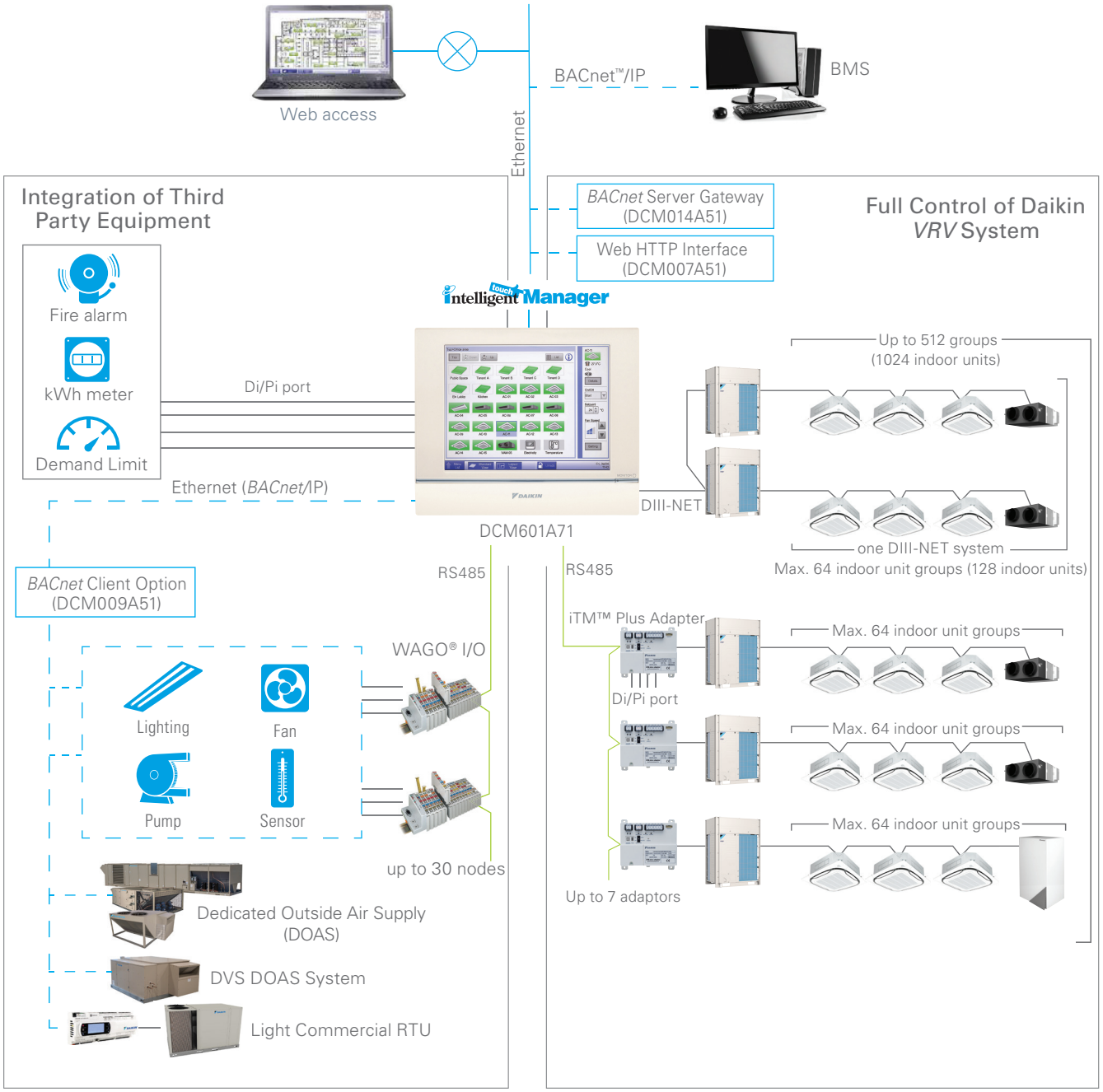
» BMS can monitor the *BACnet* objects of indoor unit and outdoor unit operation data with the *BACnet* Server Gateway Option activated

Web (HTTP) Interface Option

» The *iTM* Web IF (HTTP) software provides a building automation system or a home automation system the ability to monitor and control the *VRV* indoor units over the HTTP protocol

» Interface between the DIII-Net and the HTTP automation work station

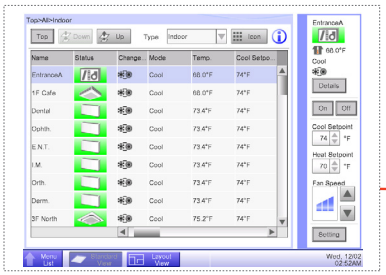
» Monitor and Control up to 512 Indoor units groups


Web access
BACnet™/IP
BMS
Ethernet
Integration of Third Party Equipment
Fire alarm
kWh meter
Demand Limit
Di/Pi port
Ethernet (BACnet/IP)
BACnet Server Gateway (DCM014A51)
Web HTTP Interface (DCM007A51)
intelligent touch Manager
DCM601A71
Full Control of Daikin VRV System
Up to 512 groups (1024 indoor units)
DIII-NET
one DIII-NET system
Max. 64 indoor unit groups (128 indoor units)
BACnet Client Option (DCM009A51)
RS485
WAGO® I/O
Lighting
Fan
Pump
Sensor
up to 30 nodes
RS485
iTM™ Plus Adapter
Di/Pi port
Max. 64 indoor unit groups
Max. 64 indoor unit groups
Max. 64 indoor unit groups
Up to 7 adaptors
Dedicated Outside Air Supply (DOAS)
DVS DOAS System
Light Commercial RTU

EASY OPERATION AND CONFIGURATION

The easy to understand icon and intuitive menu will enable even a novice user to be proficient in managing the *VRV* system.

List



[List view] Designed for simplicity, List View provides a quick view of overall status and essential information in a list format. Using the sorting function, the indoor units operating under the same conditions and status are identified for comparison and assessment.

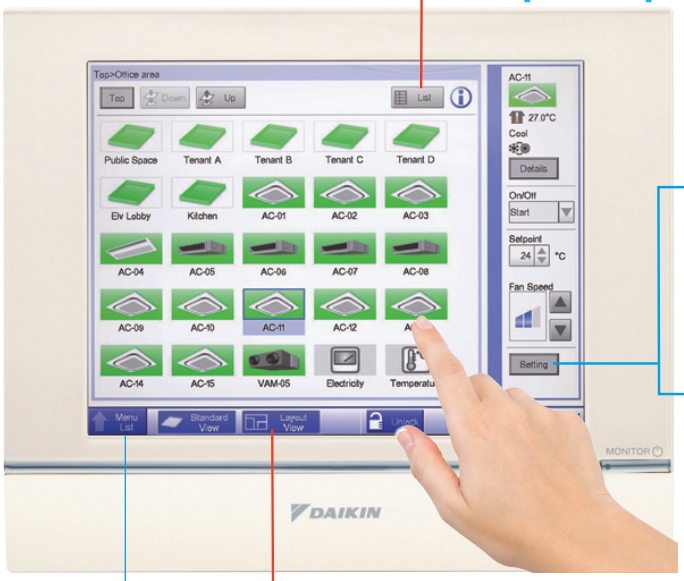
[Icon view]

ON

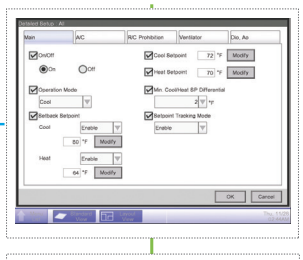
Filter sign

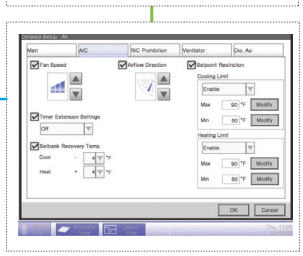
OFF

Error



Area / Unit Detailed Settings



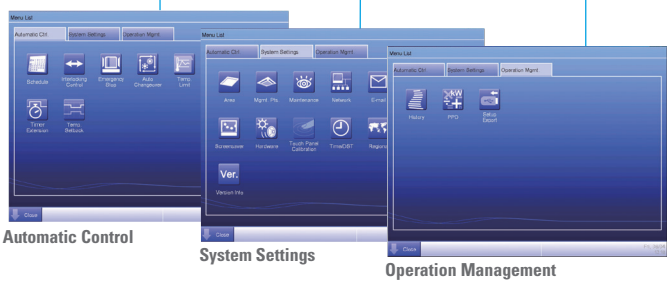


Layout View

[Layout view] A special feature utilizes building floor plans to provide a visual representation of system equipment.

The users can visually locate any installed equipment on the floor plan without having to memorize equipment names.

Icon menus for configurations



Automatic Control

System Settings

Operation Management

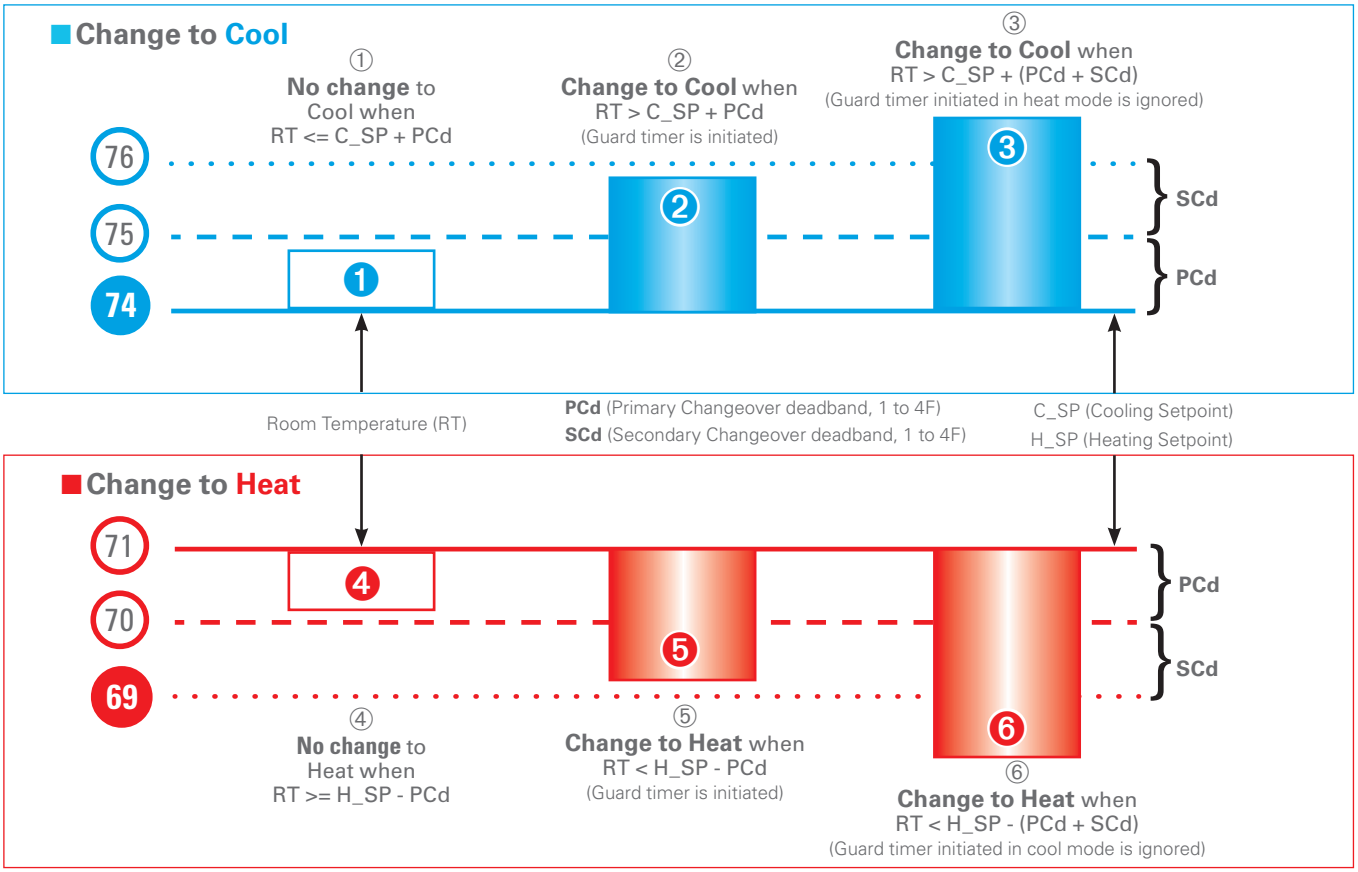
Easy Engineering

The system configuration can be done through the Preset Tool off-site then imported to the *iTM* via the USB port at the site. This feature makes engineering easier and more manageable.

The *iTM* extends the Auto Changeover capabilities based on cooling or heating demand.

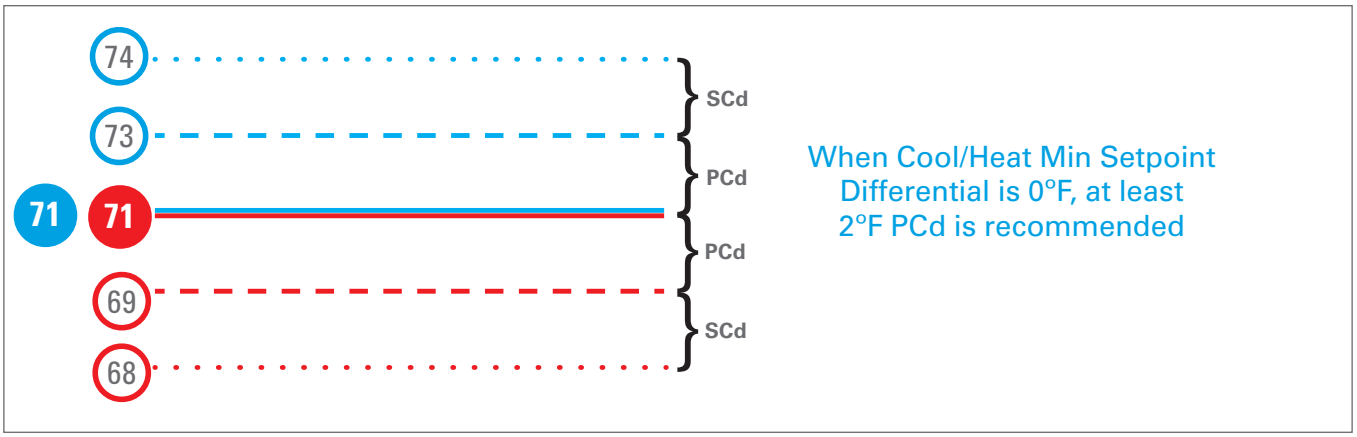
The changeover is evaluated by how much the room temperature has deviated from the cooling or heating setpoint. For example, when the room temperature exceeds the primary changeover deadband from the cooling setpoint, *iTM* initiates a change from the heating mode to the cooling mode.

The changeover deadbands can be configured to the minimum of 1˚F or to a maximum of 4˚F.



» The guard timer prevents another changeover for 15, 30 or 60 minutes (configurable).

» When the setpoint is changed manually or by the schedule, the guard timer is not active.



AUTO CHANGEOVER (CONT.)

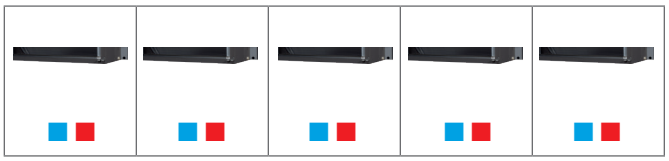
Auto Changeover is applicable to both *VRV* Heat Pump and Heat Recovery system.

The *iTM* provides four changeover methods to meet a variety of expectations in your project. Fixed, Individual, Average or Vote methods can be specified in the changeover group with targeted indoor units as well as Primary / Secondary Changeover deadbands.

Fixed method

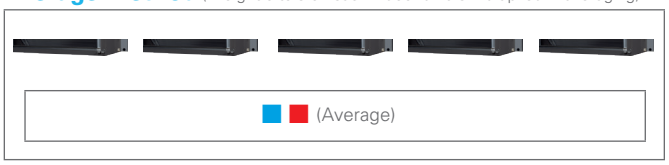
- Changeover is evaluated with the representative indoor unit.
- Changeover affects all indoor units.
- Good for prioritizing the representative indoor unit for the Heat Pump system (or multiple units on the same port of the BS Box in Heat Recovery system).

Individual method



- Changeover is evaluated with, and affects each indoor unit individually.
- Good for Hotel / Nursing home application with the Heat Recovery system.

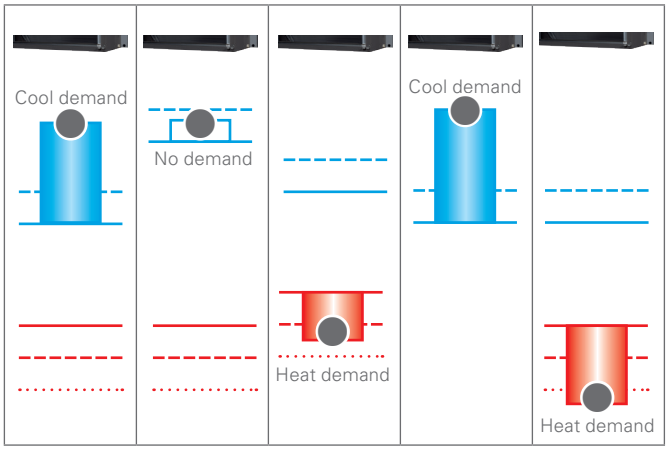
Average method (Weight 0 to 3 on each indoor unit is multiplied in averaging)



■ = **Cool Mode** ■ = **Heat Mode**

- Changeover is evaluated with the average of room temperature and setpoints.
- Changeover affects all indoor units.
- Good for Open office application with Heat Pump system (or multiple units on the same port of the BS Box in Heat Recovery system).

Vote method (Weight 0 to 3 on each indoor unit is multiplied for the demand)



- Option available for heating override if there is an indoor unit which the heating demand exceeds (H_SP – (PCd + SCd))

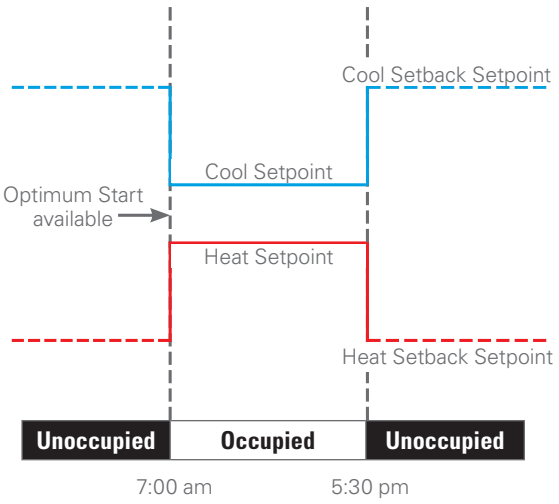
- Changeover is evaluated based upon total cooling demand and total heating demand. If the total cooling demand is greater than the total heating demand (like the figure left), the *iTM* changes the indoor units in the changeover group to cooling mode.
- When the changeover group is in cooling mode the total cooling demand will be decreased, at that point the total heating demand may become greater than the cooling demand and change the mode to heating (a guard timer applies).
- The setpoints can be different in each indoor unit within the changeover group. The demand is calculated based on the setpoints in comparison to room temperature for each indoor unit. The demand within the Primary Changeover deadband (PCd) is considered as no demand.
- Good for the Heat Pump system (or multiple units on the same port of the BS Box in Heat Recovery system) as pseudo simultaneous cooling and heating operation.
- A weight (0-3) can be added to each indoor units demand in the changeover group. The default is 1.

SCHEDULE

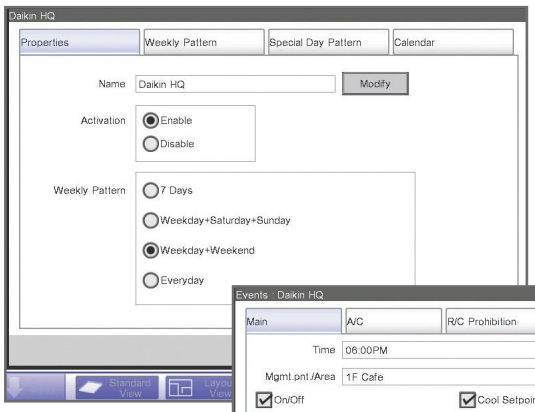
Weekly Schedule with dual setpoints for the occupied period and Setback setpoints for the unoccupied period provides year round schedule programming.

- Up to 100 schedule programs can be created with up to 20 events per day.
- 7 day, 5+2 (Weekday + Weekend), 5+1+1 (Weekday + Saturday + Sunday), 1 (Everyday) weekly patterns are available with annual scheduling that provides 5 special day programs for holiday scheduling or events outside the weekly schedule.
- Special day programming can be specified on calendar as a specific day (like Jan 1st) or a floating day (like 1st Monday in September).
- Timer Extension offers 30 to 180 minutes (configurable) Override in the unoccupied period.
- Optimum Start insures the room temperature achieves setpoint at the scheduled event time.
- Daylight Savings Time (DST) setting automatically adjust the *iTM* clock to insure schedule times are met.
- Set compressor demand limit and low noise mode for the condenser.

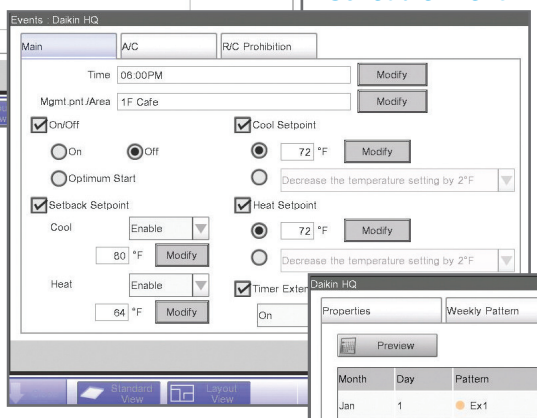
Typical Weekday Office Schedule



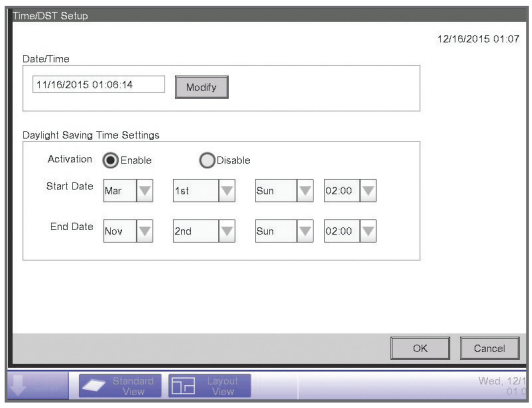
Weekly Patterns



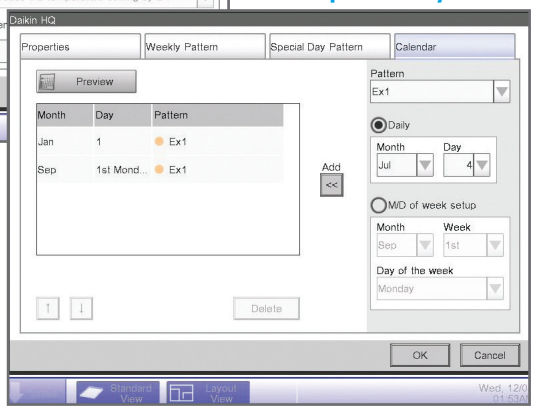
Schedule Event



Daylight Savings Time



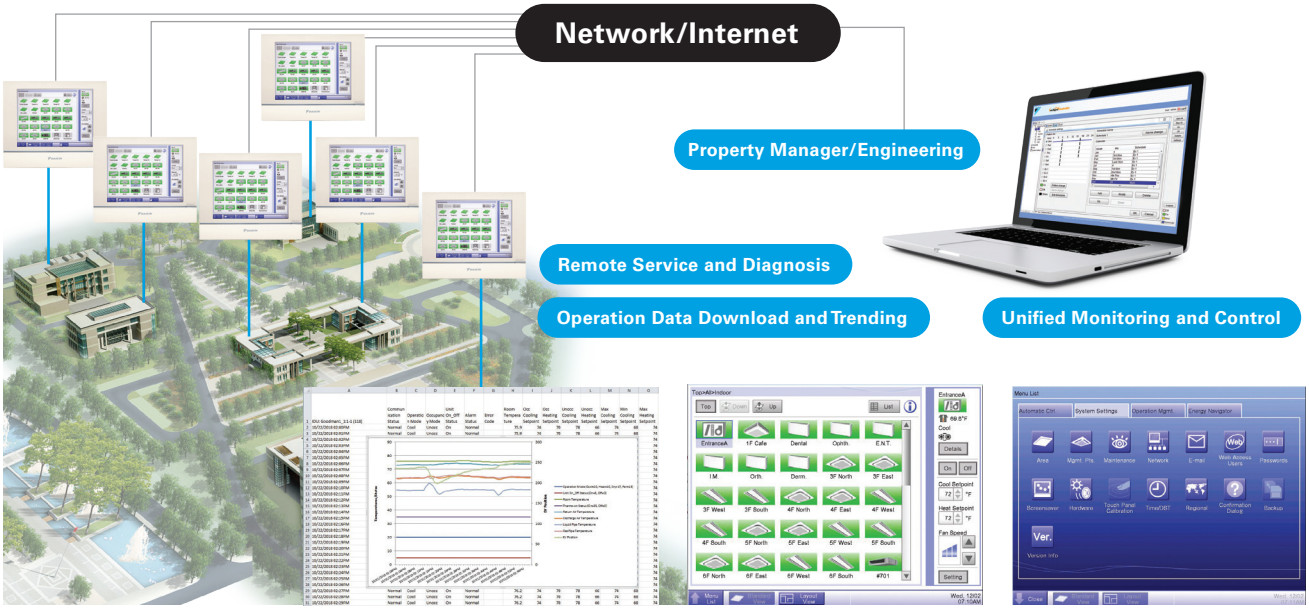
Special Day



» The Web function (HTML 5) enables remote management for the Daikin *VRV* system with other general equipment integrated into the *iTM* so they can be accessed from your PC/compatible smart device.
  – Up to 4 administrators and 60 general users can be registered.
  – Screens and operation accessible to general users can be restricted.

» *iTM* is a powerful remote service tool. Operation data stored in the *iTM* for the last 5 days can be downloaded through the Web function. Trend graphs of the system operation can be created based on the downloaded data log. Service technicians can analyze and diagnose the system before going to the job site. This feature will provide the Service Technician with a view into the *VRV* system operation and performance prior to a maintenance issue occurrence.

» Automatic Alert/Error e-mail enables prompt response by service personnel based on timely and precise knowledge of what happened in the system at the remote site.
  – Up to 10 e-mail addresses can be set.
  – The SMTP server authentication method is selectable from no authentication, POP before SMTP, and SMTP-AUTH.



HTML 5 support

Operation data log and trending

Indoor icon view via Web

Configuration menu via Web

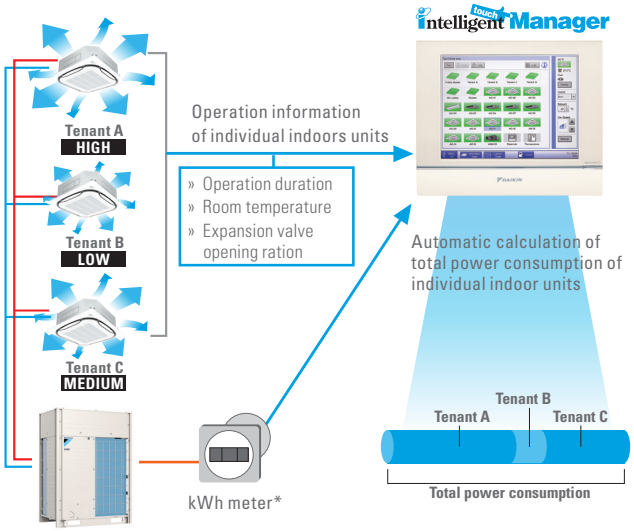
Tenant Billing (PPD Option)

The *iTM* PPD (Power Proportional Distribution) option records all the operation duration, room temperature, electronic expansion valve opening ratio data, etc. Based on the recorded data, the energy consumption of the *VRV* system is proportionally calculated for each indoor unit. The calculated data can be used for tenant billing.

Easy to output PPD data

PPD data can be downloaded in CSV format to a PC or USB flash drive.

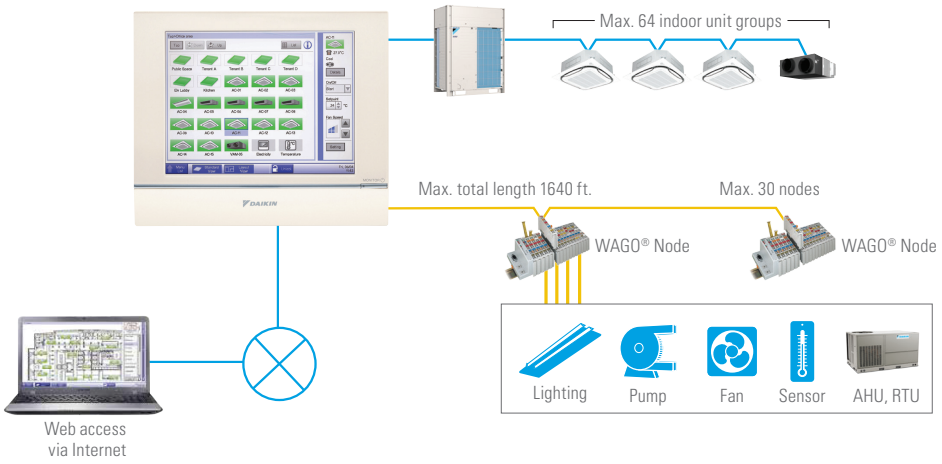
» Output data can be customized using the PPD Calculation Tool



* Pulse power meter that provides an output of 1 pulse per 1 kw and has a width of 40-400 milliseconds.

General equipment can be integrated with the *iTM* by using the *WAGO* I/O modules. The general equipment can be monitored and controlled via interlock, manual operation, and schedule. The *WAGO* I/O Modules provide Digital Inputs (Di) for monitoring equipment status and alarms, Digital Outputs (Do) for On/Off control, Analog Outputs (Ao) for step control of fan speeds and damper opening and Analog Inputs (Ai) for temperature, humidity and CO_2 monitoring.

- » ON/OFF operation and status monitoring
- » Get Alert/Error e-mail upon malfunction
- » Remote management using web function



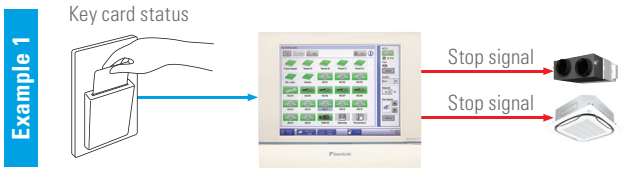
Interlock Variety

The iTM offers monitoring and control that extends beyond simply starting and stopping connected units. It also enables the iTM to control the HVAC and ancillary equipment through interlock control such as occupancy control and demand control ventilation.

Demand Control Ventilation

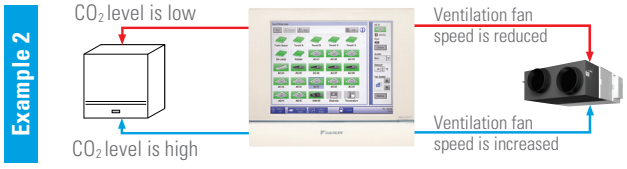
HVAC interlock based upon room occupancy status

Key control systems and occupancy sensors are employed to detect room occupancy status and automatically perform setback or stop operations for unoccupied rooms depending on settings.



Ventilation control

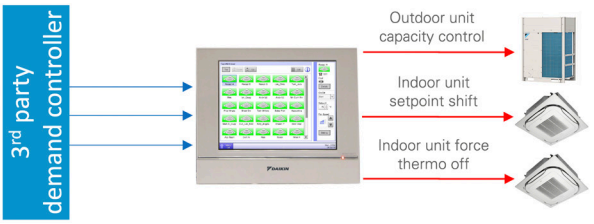
Ventilation equipment is controlled depending on the indoor CO_2 levels. Air conditioning losses attributed to unnecessary ventilation are reduced while maintaining appropriate indoor air quality and enabling energy savings.



Demand Control (Power Limit Control)

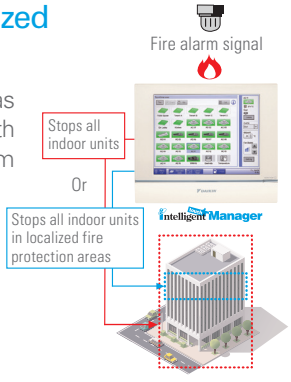
Demand Control (Power Limit Control) is intended to limit power consumption of outdoor unit. iTM (intelligent Touch Manager) supports up to 3 load cut off levels.

This function allows the control of VRV power consumption by combining indoor unit temperature setting shift control, indoor unit forced thermo-off, and outdoor unit capacity control to reduce energy consumption while minimizing impact on the controlled environment.



Emergency stop for localized fire protection areas

The *iTM* offers options to select areas or the whole system to interlock with the fire alarm system and to perform an emergency stop.



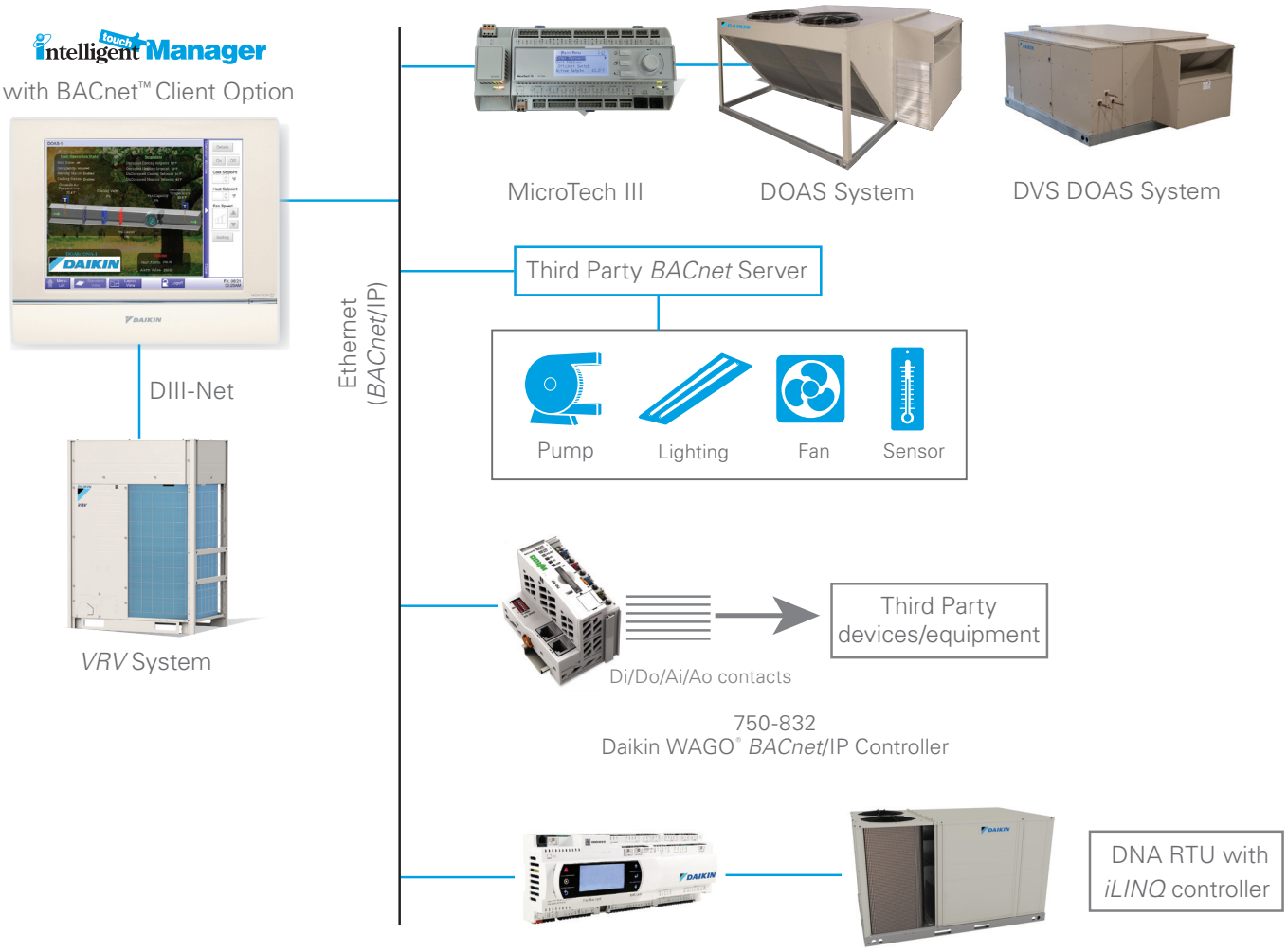
MINI BMS SOLUTION WITH THE BACNET™ CLIENT OPTION

DCM009A51 - BACnet™ Client Option

The *iTM* offers an advanced and cost-effective solution for Building Management Systems (BMS) applications. The *iTM BACnet* Client Option (DCM009A51) provides more flexibility to enhance the *iTM*'s function as a mini BMS. With this option, the *iTM* is able to manage third party DOAS and other third party equipment through the *BACnet*/IP protocol. By registering equipment connected to a *BACnet* server as management points in the *iTM*, you can now monitor and control the equipment via the *iTM*.

Features and Benefits:

- Cost-effective BMS solution
- Direct connection on *iTM* using the *BACnet*/IP Protocol
- Integrated control on Daikin *VRV* system and Daikin Applied System
- Monitors and controls third party equipment
- Commission with pre-engineering Preset Tool
- Easy monitoring with preconfigured GUI
- Monitor and control Daikin Light Commerical rooftop units (RTU) with *iLINQ* controller.



Object Types

- Analog Input, Analog Output, Analog Value
- Binary Input, Binary Output, Binary Value
- Multi-State Input, Multi-State Output, Multi-State Value

Applications

- Sensors, Pumps, Lights, Fans
- AHU, Alarms, DOAS, Elevator
- The *iTM* can integrate with the *WAGO BACnet*/IP Controller (750-832) using the *BACnet* Client Option

ADVANCED BMS INTEGRATION SOLUTION WITH THE BACNET™ SERVER GATEWAY OPTION

DCM014A51 - *iTM* BACnet™ Server Gateway Option

The *intelligent Touch Manager* is capable of serving as a *BACnet* interface for Building Management System (BMS) integration. With the *iTM BACnet* Server Gateway Option (DCM014A51), the *iTM* provides BMS integrators with the ability to monitor and/or control the *VRV* indoor and outdoor units, eliminating the need for an additional hardware interface. With the *iTM BACnet* Server Gateway Option, the operation data points for both the IDU (indoor unit) and ODU (outdoor unit) are also available to the BMS through *BACnet*.

Features

» Additional service data points are now available for compatible units:
  – 6 new IDU service data points
  – 9 new common ODU service data points and 22 new service data points for each ODU module

» Direct connection on *iTM* using the *BACnet*/IP Protocol

» ***BACnet* virtual router** function implemented:
  – **Individual *BACnet* device ID** assigned to each indoor unit group address and each outdoor unit
  – Indoor unit group names created in the *iTM* are visible on the BMS

» Easy commissioning using CSV file
  – Available objects can be configured for each indoor unit

» Supports Change of Value (COV) notifications to the BMS

» Configurable as a *BACnet* foreign device if a BBMD exist on a different subnet within a *BACnet* network

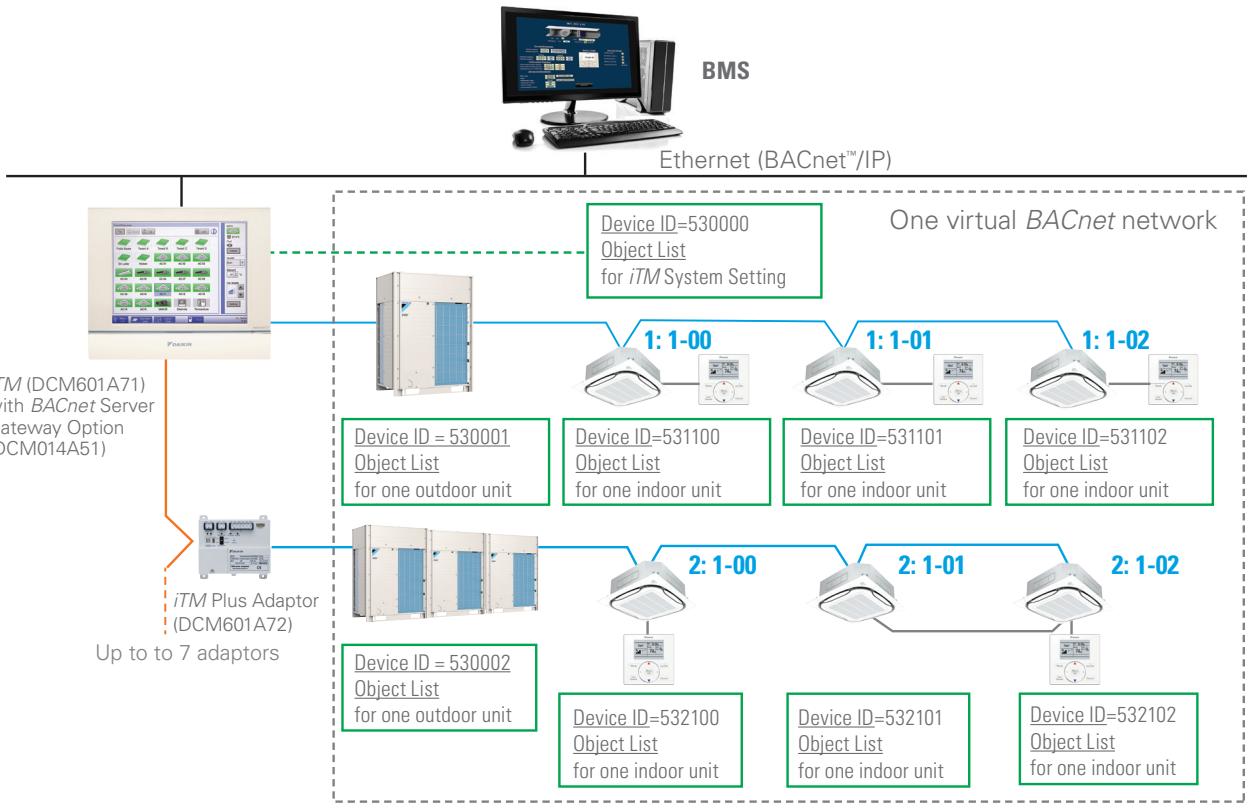
» **Independent heating and cooling setpoints** for occupied and unoccupied periods

» Individual min/max **Setpoint Range Limitation** for heat and cool modes

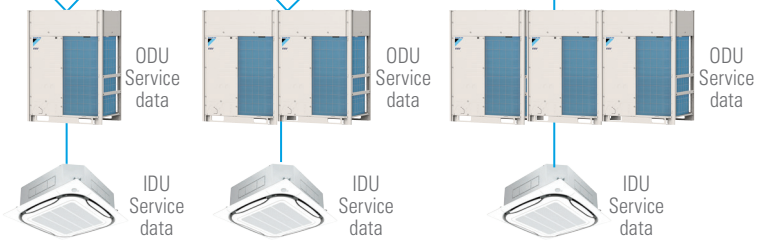
» The *iTM's* **auto changeover, setpoint range limitation, setback, dual setpoint** logic and **schedule** can be accessed by the BMS

» Up to 128 Device IDs (including both indoor units and outdoor units) and up to 4000 *BACnet* objects can be monitored and controlled by BMS.
  – When the IDU/ODU operation data is enabled a total of 128 devices and 4000 *BACnet* points are available

» Up to 7 *iTM* Plus Adaptors can be connected to an *iTM* for a total of 8 DIII-Net ports



Powerful Service Tool with Indoor and Outdoor Unit Operation Data Points



» When a problem occurs, the BMS integrators and Service Technicians can start troubleshooting immediately before going to the site.

» Indoor and outdoor operation data trending* by BMS can benefit the *VRV* service process.

*BMS programming needed

Enhanced BMS Integration Solution for Indoor Unit Operation

Individual Device instance number for each indoor unit (Configurable)

Device ID (1:1-00) = 531100 Device ID (1:1-01) = 531101

Object instance number repeated for every indoor unit point

Occupancy Mode = MO 1 (All indoor units)

Unit On Off Status = BI 2 (All indoor units)

Advanced *iTM BACnet* Server Gateway Points

BMS

iTM System Settings	Enable/disable *iTM* schedule operation	Schedule
	Enable/disable *iTM* auto changeover operation	Auto Changeover
	Timed override minutes	Timer Extension Minutes
	System forced off	Emergency Stop
Indoor Unit Operation and Monitoring	Occupancy mode (occ, unocc, standby)	On/Off
	Occupied cooling and heating setpoint	Occupied Dual Setpoint
	Unoccupied cooling and heating setpoint	Setback Setpoints
	Maximum and minimum cooling setpoint	Setpoint Range Limitation
	Maximum and minimum heating setpoint	
	Minimum cooling and heating setpoint differential	Min. Cool/Heat SP Differential
	Cooling and heating setpoint tracking mode	Setpoint Tracking Mode
	Remote control prohibit	Remote Controller Prohibit
	Timed override operation	Timer Extension
	Current unit operation (off, normal, override, setback)	And more basic functions...
	Forced indoor unit thermo-off	
	Indoor unit changeover option availability	
	Indoor fan status	
	and more basic operation and monitoring points...	

iTM Control Logic

Advanced Indoor Unit Operation

Specifications

		iTM	*iTM* PLUS ADAPTOR
Model		DCM601A71	DCM601A72
Power supply		AC 24V 60Hz	AC 24V 60Hz
Power consumption		23W maximum	23W maximum
Operating conditions	Surrounding temperature	32 °F to 104 °F	14 °F to 122 °F
	Humidity	15% to 85% RH (non condensing)	15% to 85% RH (non condensing)
Dimensions	H x W x D (inch)	9.57 x 11.42 x 1.97	5.87 x 6.30 x 2.41
Capacity	Max. number of indoor unit	64 addressed indoor unit groups (maximum 128 indoor units)	64 addressed indoor unit groups (maximum 128 indoor units)
	Max. number of outdoor unit	10	10
Interface	F1F2 (Daikin DIII-NET communication)	1	1
	100Base-TX (Ethernet communication)	1 (RJ-45)	-
	USB port (for flash memory drive)	1 (2 to 32 GB)	-
	RS-485 (for *iTM* Plus Adaptor connection)	1 (2-wire polarity sensitive)	1 (2-wire polarity sensitive)
Input terminals	Di (Digital input for forced shutdown)	1	-
	Di/Pi (Digital/Pulse input)*	3	4
EMC certification		FCC Part 15 Class B	FCC Part 15 Class B

* Pulse input from KWh meter requirements: 1 pulse to 1kWh or 10kWh. Pulse width must be between 40-400 msec. Non voltage, normally open semi-conductor type.

Summary of Functions

CATEGORY	FUNCTION		REMARKS
Basic Functions	*iTM* Plus Adaptor		Maximum number of adaptors: 7
	Management points		Maximum number of management points: 650
			Maximum number of indoor unit management points: 512
	Areas		Maximum number of areas: 650
			Maximum area levels: 10
	Language		English
	Monitoring screens	Icon view	Icons show the operation status of equipment
		List view	Detailed information of each management point is displayed
		Layout view	Up to 60 screens can be created
Automatic Control	Schedule		Maximum number of programs: 100
			Up to 20 actions/day can be set
	Weekly Schedule		7 day, 5+2,5+1+1,and Everyday weekly patterns can be set
	Yearly Calendar		Special days can be specified by specific date or floating date
			Automatic DST adjustment
	Optimum Start		Ensure the room temperature is reached at scheduled start time
	Interlock		Maximum number of programs: 500
	Emergency Stop		Maximum number of Programs: 31
	Auto changeover		Maximum number of changeover groups: 512
	Temperature Range Limitation		Independent cooling and heating setpoint range limitation
			Set between 60-90°F
	Timer Extension		Selectable from 30, 60, 90, 120, and 180 minutes
	Power Limit Control		Schedule compressor demand limit and low noise operation. Energy saving functions that can be interlocked with digital input signals Indoor unit set-point shift control, Indoor unit forced thermo-off, Indoor unit on/off control and Outdoor unit's capacity demand limit control
	Setback		Independent heating and cooling setback setpoint
			Setback recovery temperature range: 2-10°F
Data Control	History		Up to 500,000 events are recorded in history including malfunctions, operations, automatic control, and system information
	Operation data history		Operation data for every minute in the last 5 days are stored in *iTM* including indoor and outdoor operation data, *BACnet* Client management data points, and *WAGO* IO system data points
	Power proportional distribution		Up to 13 months of hourly power proportional distribution results are recorded
			CSV format data output are supported
Remote Access	Web access		Display the same type of screen as the *iTM*
			Up to 4 administrators and 60 general users can be registered
			Screens and operation accessible to general users can be restricted
	Operation data download		Operation data for every minute in the last 5 days can be downloaded from Web access
	Email Alert		Up to 10 email addresses can be set
System	Automatic Registration		Indoor units are automatically detected, and icons for respective models are automatically registered
	Security		Screen lock function are available
			Access restriction can be set for each general user
	Screen saver		Screen saver time can be set from 1-60 mins
			3 patterns are available

Options for *intelligent Touch Manager (iTM)*

ITEM	MODEL	DESCRIPTION
Optional Software	DCM002A71	Power Proportional Distribution (PPD) [1]
	DCM007A51	iTM Web (HTTP) Interface Option
	DCM009A51	BACnet™ IP Client Option [2]
	DCM014A51	*BACnet* Server Gateway Option
Interface Adaptors	KRP928BB2S	For connection to Daikin Mini-Split system (connect to Indoor Unit)

[1] The power proportional distribution (PPD) feature supplies the user with a reasonably calculated apportionment of the total power consumption by the Daikin *VRV* system. Because input to the PPD includes measured pulses in the refrigerant system and because the *VRV* system includes a number of variables, including the operating temperatures and pressures, piping lengths, heat exchange rates, and so forth, no meter-type apportionment of individual user consumption can be made. However, the PPD feature provides an apportionment methodology that uses highly advanced technology and is applied to the many variables in the *VRV* system.

[2] *BACnet* IP Client Option can not be activated at the same time with *BACnet* Server Gateway Option.

WAGO® I/O System

MODULE		PART NUMBER	DESCRIPTION
Basic Kit		60359653	Bus Coupler, Connector, 24 VDC Power Supply, and End Module
Digital Input	2 Channel DI	750-400	2 Channel Digital Input Module, 24 VDC
	4 Channel DI	750-432	4 Channel Digital Input Module, 24 VDC
	8 Channel DI	750-430	8 Channel Digital Input Module, 24 VDC
Digital Output	2 Channel DO	750-513/000-001	2 Channel Digital Output Module, without power jumper
	4 Channel DO	750-504	4 Channel Digital Output Module, 24 VDC
Analog Input	2 Channel AI	750-454	2 Channel Analog Input Module, 4-20 mA, Differential Inputs
		750-479	2 Channel Analog Input Module, ± 10 VDC, Differential Measurement Input
		750-461/020-000	2 Channel Analog Input Module, NTC 20k Ohm
	4 Channel AI	750-455	4 Channel Analog Input Module, 4-20 mA, single-ended
		750-459	4 Channel Analog Input Module, 0-10 VDC, single-ended
		750-464/020-000	4 Channel Analog Input Module, NTC 20k Ohm/ NTC 10k Ohm, configurable
Analog Output	2 Channel AO	750-554	2 Channel Analog Output Module, 4-20 mA
		750-550	2 Channel Analog Output Module, 0-10 VDC
	4 Channel AO	750-555	4 Channel Analog Output Module, 4-20 mA
		750-559	4 Channel Analog Output Module, 0-10 VDC
Internal System Power Supply		750-613	24 VDC Bus Power Supply Module, Required for use after every 32 contact points connected in a node
Passive Power Supply		750-602	24 VDC Power Supply Module, passive
Field Set Connection Module		750-603	Field Set Connection Module for 8 channel DI module

About Daikin:

Daikin Industries, Ltd. (DIL) is a global Fortune 1000 company and is recognized as one of the largest HVAC (Heating, Ventilation, Air Conditioning) manufacturers in the world. Founded in 1924, Daikin is approaching 100 years of HVAC worldwide leadership. DIL is primarily engaged in developing indoor comfort systems and refrigeration products for residential, commercial, and industrial applications. Its consistent success is derived, in part, from a focus on innovative, energy-efficient, and premium quality indoor climate and comfort management solutions.

Learn more at www.daikinac.com

ADDITIONAL INFORMATION

Before purchasing this appliance, read important information about its estimated annual energy consumption, yearly operating cost, or energy efficiency rating that is available from your retailer.