1. Introduction

According to a U.S Department of Energy (DOE) study in 2012, less than 10% of the buildings have a Building Management System (BMS). Over 90% of the buildings are below 50,000 Sq. Ft. Most buildings use 50-100 indoor units for comfort cooling and heating purposes. An uncontrolled building could have higher energy consumption compared to a managed building.

Buildings that are less than 10,000 Sq. Ft. in the area may prefer smart thermostat type solution and buildings that are greater than 50,000 Sq. Ft. can afford a traditional BMS. The intelligent Touch Manager (iTM) as mini BMS fits the 10,000 Sq. Ft. – 50,000 Sq. Ft. market segment which amounts to 22% of the buildings. Typical controls scope for a building that is less than 50,000 Sq. Ft. is shown below.

A mini-BMS in the building could control and monitor equipment such as Variable Refrigerant Volume (VRV) system, Dedicated Outside Air System (DOAS), Energy Recovery Ventilator (ERV), Exhaust Fans, Conventional Rooftops, Critical Rooms Units, IT Rooms and Lighting System. The intelligent Touch Manager operating as a Mini-BMS can control and monitor the equipment mentioned above with its standard features and add-on features.

The iTM could be a mini-BMS in the following applications

- Healthcare such as a private office or small clinics
- Lodging/hotels
- Retail (other than malls, auto dealerships, large showrooms)
- Office spaces
- Banks and credit unions
- Public order and safety
- Religious worship
- Order and safety
- Education (could also be adult learning or private/charter schools)
1. Introduction

The *intelligent Touch Manager* can control and monitor the VRV indoor units as well as control and monitoring of third-party units with the following options:

1. BACnet™ Client Software option (PN# DCM009A51)
2. WAGO® Input and Output modules (PN# 60359653 and Modules)
3. Daikin WAGO BACnet/IP Controller (PN# 750-831)

This application guide describes various features and options available for the *intelligent Touch Manager* and how to apply them. Based on the application one or a combination of the above options can be used to control third-party equipment.
2. intelligent Touch Manager Overview

The intelligent Touch Manager (iTM) is an advanced multi-zone controller that controls and monitors the Daikin VRV system as well as third-party equipment. The iTM can 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 for BMS integration with the iTM BACnet Server Gateway Option.

Easy Operation and Configuration

» Intuitive user interface with 10.4” LCD touchscreen.
» Flexible screen views include the icon view, list view, and layout view for system configurations.
» Easy engineering with the use of the Preset Tool and USB port.

Advanced VRV 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.
» Automatic error and alert emails.
» Tenant Billing with iTM PPD option.
» Provide indoor unit and outdoor unit operation data for up to five days.

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.
2. *intelligent Touch Manager Overview*

**BACnet Server Gateway Option**

» Direct connection to the VRV system using the iTM as a gateway.
» Individual device ID assigned to each indoor unit and outdoor unit management point.
» 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 via the iTM web browser remotely.
» The BMS can monitor the BACnet objects of the indoor unit, and outdoor unit operation data with the BACnet Server Gateway Option activated.

**Web function and remote monitoring**

The Web function enables remote management for the Daikin VRV system with other general equipment integrated into the iTM so they can be accessed from a PC using a browser compatible with a flash player. Four administrators and sixty general users can be registered to access the iTM. Screens and operation accessible to general users can be restricted using the menu functions.

(*) Flash Player is required.
2. Intelligent Touch Manager Overview

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.

3. Intelligent Touch Manager as a BACnet Client

The iTM offers a cost-effective solution for building management system (BMS) applications using the BACnet Client software option. The iTM BACnet Client Option (DCM009A51) provides more flexibility to enhance the iTM’s function as a mini BMS with BACnet capabilities. Using the BACnet Client option, the iTM can control and monitor a third party Dedicated Outside Air System (DOAS) and other third-party equipment using the BACnet/IP protocol.

- It is a cost-effective BMS solution for small and medium-size buildings under 50,000 Sq. Ft.
- Controls and monitors any equipment with an integrated BACnet IP servers such as generators, third-party air handlers, energy recovery ventilators, lighting panels, and the Daikin Zoning Kit (DZK).
- Offers integrated control on Daikin VRV systems and third-party mechanical equipment.
- Perform easy commissioning with pre-Engineering Tool
- Add user-generated graphical user interface to iTM to view third-party units.
- iTM BACnet Client software option reduces the need for a third-party controls integrator saving valuable project costs and reduces integration issues.
- Able to download operation data from VRV indoor unit and outdoor unit and data from third-party devices connected via WAGO or BACnet.
3. \textit{intelligent Touch Manager as a BACnet Client}

3.1 System Architecture:

3.2 Product Specifications:

» Communication Protocol: \textit{BACnet/IP}.
» Wiring for \textit{BACnet/IP}: Requires a CAT5 Ethernet cable.
» A maximum of 50 \textit{BACnet} devices can be registered in one \textit{iTM}.
» A maximum of 512 \textit{iTM} Management Points can be created for \textit{BACnet} objects.
» A maximum of 1536 \textit{BACnet} objects can be monitored.
» The \textit{BACnet} Client function supports the following nine \textit{BACnet} object types.
   » Analog Input (7 digits)
   » Analog Output (7 digits)
   » Analog Value (7 digits)
   » Binary Input
   » Binary Output
   » Binary Value
   » Multistate Input (max 10 states)
   » Multistate Output (max 10 states)
   » Multistate Value (max 10 states)

» Use the \textit{BACnet} Objects in schedule and interlock function of the \textit{iTM} to control third-party units.
» Record and monitor operation data (See Appendix).
3. *intelligent Touch Manager* as a *BACnet* Client

**3.3 Better Integration with Daikin Applied DOAS:**

» By using the *intelligent Touch Manager* as the Mini-BMS better integration can be achieved with Daikin Applied DOAS compared older integration methods such as a D3-Gateway.

» The complete equipment and control solution can be created with Daikin equipment by combining *VRV* and *Applied Air Handlers*.

» The cost of controls can be reduced compared to having a traditional BMS.

**3.4 Applying *iTM BACnet* Client**

When applying the *BACnet* Client, it is important to make sure the project needs can be met with an *intelligent Touch Manager* considering the current and future needs of the building. The *intelligent Touch Manager BACnet* Client uses very common building communications protocol, i.e. *BACnet*. Designing and building a project using the *iTM BACnet* Client creates a *BACnet* ready building that is easy for a possible future integration to a full-scale BMS as *BACnet* is an open protocol. The project needs can be broadly classified into three parameters

(1) **Total number of management points allowed in the *intelligent Touch Manager***

Calculate the total number of points, so it does not exceed the *iTM* limitation. The following table below can help in the calculation:

<table>
<thead>
<tr>
<th></th>
<th><strong>Limit</strong></th>
<th><strong>Enter the Count</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>Indoor Unit (<em>VRV</em> Fan Coil, VAM, Mini-splits, FXMQ_OA)</td>
<td>&lt;512</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td><em>BACnet</em> Data Points</td>
<td>(All Categories combined) &lt; 512</td>
</tr>
<tr>
<td></td>
<td><em>WAGO</em> I/O Data Points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D3Dio, D3Di</td>
<td></td>
</tr>
<tr>
<td><strong>Total (A+B)</strong></td>
<td></td>
<td>&lt;650</td>
</tr>
</tbody>
</table>

Total management points in an *iTM* should not be greater than 650.

(2) **Programming complexity to achieve the sequence of operation.**

Here is a list of common programming options available using *iTM*

» Scheduling

» Interlock Programming

» Alarm Monitoring

» History Logging and Trending
3. *intelligent Touch Manager as a BACnet Client*

The *intelligent Touch Manager* is designed to be a simple building management system and acts as a supervisory controller, and it is expected that the heavy programming is supported by the field controller (controller installed to control specific equipment) installed at the third-party equipment.

The following list provides examples of heavy programming items and these cannot be programmed at the *intelligent Touch Manager*

- PID Loop programming.
- Lead/Lag programming or duty cycle rotation.
- Visualization of trend graphs.
- Dynamic graphics.

Applications that specifically require heavy programming can be achieved by using a third-party building management system or using the Daikin *WAGO BACnet/IP* Controller. The Daikin *WAGO BACnet/IP* Controller is discussed later in the guide.

(3) The third-party equipment monitored by the *iTM* should communicate *BACnet/IP*

- The third-party equipment should be furnished with *BACnet/IP* communication module.
- If the device only communicates *BACnet MS/TP*, then a *BACnet MS/TP to BACnet/IP* router is required.
- If the device only communicates Modbus®, then a *Modbus to BACnet/IP* router is required.
- If the device uses only input and output contacts for control, then *WAGO I/O* or Daikin *WAGO BACnet/IP* Controller may be required.

**3.5 Setup and Commissioning of *iTM BACnet* Client**

To setup the *iTM* as a *BACnet* client, the option has to be activated using the activation code. Once the *BACnet* Client software has been activated at the *intelligent Touch Manager*, the external *BACnet* devices can be integrated. The point mapping is performed by downloading a .CSV (comma-separated value file) using a USB drive. The .CSV file is edited by using Microsoft Excel software. The points mapping can be created remotely saving precious on-site time.

- The third-party equipment should be furnished with a *BACnet/IP* communication module.
- If the device only communicates *BACnet MS/TP*, then a *BACnet MS/TP to BACnet/IP* router is required.
- If the device only communicates Modbus®, then a *Modbus to BACnet/IP* router is required.
- If the device uses only input and output contacts for control, then *WAGO I/O* or Daikin *WAGO BACnet/IP* controller may be required.

Daikin also offers Microsoft Excel-based tools to create the point mapping file. The tools save time compared to creating the excel file manually. The Microsoft Excel tools (*iTM BACnet* Client Macro Tools) can be downloaded from [www.Daikincity.com](http://www.Daikincity.com), and the tools are provided along with instructions on how to use them.
3. *intelligent Touch Manager as a BACnet Client*

Graphics screens can also be added to the *intelligent Touch Manager* to display the equipment.

The graphics screen can be custom created or created from templates (*iTM BACnet Client GUI Templates*) that are available to download from the [www.Daikincity.com](http://www.Daikincity.com).

The following flowchart shows basic steps involved in the commissioning of the *intelligent Touch Manager* with the BACnet Client option,

```
1. Update *intelligent Touch Manager* Software to the latest version and activate the BACnet Client license.
2. Setup the IP address, MS/TP MAC address, BACnet Instance numbers for the *intelligent Touch Manager* as well as the third party devices.
3. Create ManagementPointData. CSV for BACnet server devices and add it to the *intelligent Touch Manager*.
4. Add graphics to the *intelligent Touch Manager*.
5. Using the preset tool configure the screens on the *intelligent Touch Manager*. Actual graphics may need to be created with other software.
6. Test Communication.
7. Create Closeout documentation.
8. Test the communication for all BACnet points.
```

For the startup of *iTM BACnet Client*, it is essential that a startup technician is familiar with the entire project and equipment that are being integrated. Note that the equipment could come from multiple vendors and there may be other startup personnel involved; project coordination is paramount.
4. **WAGO I/O Option**

WAGO I/O integrates ancillary equipment into the *intelligent Touch Manager (iTM)* DCM601A71 with the use of Digital Input (DI), Digital Output (DO), Analog Input (AI) and Analog Output (AO) signals. It provides monitoring and control of non-Daikin equipment via manual control, interlock, scheduling, and remote access using the *iTM*’s touchscreen or web access.

- Connect various sensors to WAGO I/O modules such as Analog Inputs, Analog Outputs, Digital Inputs, and Digital Outputs.
- The WAGO node can connect up to 120 contacts or hardwired points.
- Up to 30 WAGO nodes can be connected to an *intelligent Touch Manager*. However, please note that an *intelligent Touch Manager* can monitor only 512 WAGO points.

### 4.1 Point Type Definitions

**Digital Input**

- A Digital Input is used to monitor status as either ‘on’ or ‘off,’ i.e., contact status. It is a confirmation of unit operation. For example, a switch is either open or closed; a Fan status can be ‘On’ or ‘Off’; a Room is Occupied or Unoccupied.
- Use Digital Input points to monitor status (Status Object) and alarms (Error Object).

- Common Digital Input signals are occupancy sensor and current switch.
4. **WAGO I/O Option**

**Digital Output**

» A Digital Output is used to command a point either to 'turn the unit on' or 'turn the unit off,' i.e., contact cycling. Example, A Fan is commanded ON or OFF; A light is turned ON or OFF

» Use Digital Output to command ON/OFF for other equipment

![Digital Output Diagram](image)

» Common Digital Output signals include: Fan Start/Stop, Pump Start/Stop, and Lights On/Off.

**Analog Input**

An Analog Input is a signal that represents a continuous time-varying quantity (It is a point that is represented by a number) such as humidity, CO₂, and temperature:

![Analog Input View](image)

**Analog Output**

An Analog Output is a command signal that represents a continuous time-varying quantity (It is a point that represented by a number) that is used to send values such as Temperature Setpoint, Pressure Setpoint, Damper position, Fan Speed.
## 4. WAGO I/O Option

### Typical Points and their Points type

<table>
<thead>
<tr>
<th>Point</th>
<th>Point Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (Example: Space Temperature, Outside Air Temperature, Return Air Temperature, Discharge Air Temperature, Entering Water Temperature, Leaving Water Temperature)</td>
<td>Analog Input</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>Analog Input</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>Analog Input</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>Analog Input</td>
</tr>
<tr>
<td>Pressure (Example: Outside Air Pressure, Building Pressure, Duct Static Pressure, Differential Pressure)</td>
<td>Analog Input</td>
</tr>
<tr>
<td>Occupancy Sensor</td>
<td>Digital Input</td>
</tr>
<tr>
<td>Fan Status</td>
<td>Digital Input</td>
</tr>
<tr>
<td>Door Switch</td>
<td>Digital Input</td>
</tr>
<tr>
<td>Generic Alarm Contact</td>
<td>Digital Input</td>
</tr>
<tr>
<td>Fan Start/Stop (Example: Exhaust Fans, Supply Fans)</td>
<td>Digital Output</td>
</tr>
<tr>
<td>On/Off Command (Example: Lights On/Off, ERV On/Off, MAU On/Off)</td>
<td>Digital Output</td>
</tr>
<tr>
<td>2-position Damper or Valve</td>
<td>Digital Output</td>
</tr>
<tr>
<td>Modulating Damper or Valve</td>
<td>Analog Output</td>
</tr>
<tr>
<td>VFD Speed Command</td>
<td>Analog Output</td>
</tr>
</tbody>
</table>
## 4. WAGO I/O Option

### List of approved WAGO I/O Modules:

<table>
<thead>
<tr>
<th>Item</th>
<th>Note</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required</strong></td>
<td>Daikin iTM Basic Kit 24 VDC Power Supply Unit, Connector, Bus Coupler, End Module</td>
<td>60359653</td>
</tr>
<tr>
<td><strong>Digital Input</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Channel Di Module</td>
<td></td>
<td>750-400</td>
</tr>
<tr>
<td>4 Channel Di Module</td>
<td></td>
<td>750-432</td>
</tr>
<tr>
<td>8 Channel Di Module</td>
<td></td>
<td>750-430</td>
</tr>
<tr>
<td><strong>Digital Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Channel Do Module</td>
<td></td>
<td>750-513/000-001</td>
</tr>
<tr>
<td>4 Channel Do Module</td>
<td></td>
<td>750-504</td>
</tr>
<tr>
<td><strong>Analog Input</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Commonly Used Modules)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Channel Ai Module</td>
<td>4-20 mA</td>
<td>750-454</td>
</tr>
<tr>
<td>2 Channel Ai Module</td>
<td>±10 VDC</td>
<td>750-479</td>
</tr>
<tr>
<td>2 Channel Ai Module</td>
<td>20KΩ Thermistor</td>
<td>750-461/020-000</td>
</tr>
<tr>
<td>4 Channel Ai Module</td>
<td>4-20 mA</td>
<td>750-455</td>
</tr>
<tr>
<td>4 Channel Ai Module</td>
<td>±10VDC</td>
<td>750-459</td>
</tr>
<tr>
<td>4 Channel Ai Module</td>
<td>10/20 K(Ohm) Thermistor</td>
<td>750-464/020-000</td>
</tr>
<tr>
<td><strong>Analog Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Channel Ao Module</td>
<td>0-10VDC</td>
<td>750-550</td>
</tr>
<tr>
<td>2 Channel Ao Module</td>
<td>4-20 mA</td>
<td>750-554</td>
</tr>
<tr>
<td>4 Channel Ai module</td>
<td>0-10 VDC</td>
<td>750-559</td>
</tr>
<tr>
<td>4 Channel Ai module</td>
<td>4-20 mA</td>
<td>750-555</td>
</tr>
<tr>
<td><strong>Internal Bus Power Supply</strong></td>
<td>24 VDC Power Supply Required every 32 contacts</td>
<td>750-613</td>
</tr>
<tr>
<td><strong>Passive Power Supply</strong></td>
<td>24VDC Power Supply</td>
<td>750-602</td>
</tr>
<tr>
<td><strong>Power Jumper</strong></td>
<td>24VDC Power Jumper</td>
<td>750-603</td>
</tr>
<tr>
<td><strong>Analog Input</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Additional Modules)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Channel Ai Module</td>
<td>Pt100/RTD</td>
<td>750-461</td>
</tr>
<tr>
<td>4 Channel Ai Module</td>
<td>Pt100/RTD</td>
<td>750-460</td>
</tr>
<tr>
<td>2 Channel Ai Module</td>
<td>Pt1000/RTD</td>
<td>750-461/000-003</td>
</tr>
<tr>
<td>4 Channel Ai Module</td>
<td>Pt1000/RTD</td>
<td>750-461/000-003</td>
</tr>
<tr>
<td>2 Channel Ai Module</td>
<td>Ni100/RTD</td>
<td>750-461/000-004</td>
</tr>
<tr>
<td>2 Channel Ai Module</td>
<td>Ni1000 TK6180/RTD</td>
<td>750-461/000-005</td>
</tr>
<tr>
<td>4 Channel Ai Module</td>
<td>Ni 1000 TK 6180/RTD</td>
<td>750-460/000-005</td>
</tr>
</tbody>
</table>
4. **WAGO I/O Option**

4.2 **Selection of a WAGO Node**

The appropriate WAGO nodes can be selected by using the WAGO selection software; available to download from www.daikincity.com website. The WAGO selection tool comes with instruction on how to use along with the tool. Additionally, how to use videos can be accessed by using Daikin’s training system.

4.3 **WAGO Wiring Reference**

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Size</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication wiring between the <em>intelligent Touch Manager</em> and the WAGO nodes</td>
<td>Stranded copper plenum rated cable; CPEV or FCPEV</td>
<td>24 AWG – 18AWG</td>
<td>1640 ft</td>
</tr>
<tr>
<td>Individual IO wiring</td>
<td>Stranded copper plenum rated cable; CPEV or FCPEV</td>
<td>24 AWG – 18AWG</td>
<td>DI/DO: 500ft AI/IO (0-10VDC or 2-10VDC) * = 50Ft – 150Ft AI/IO (4-20mA) * = 250Ft – 500Ft</td>
</tr>
</tbody>
</table>

*Voltage loops have lower wiring lengths because there is a voltage drop associated with longer wiring length thus creating a signal loss.

Typically wiring schematics for WAGO and its IO module in AutoCAD format can be downloaded from www.daikincity.com website.
Daikin WAGO BACnet/IP Controller is a custom programmed controller that can be used when the intelligent Touch Manager interlock is not capable of meeting the programming requirement. This controller can also be used in place of a third party DDC controller depending upon the application. The custom programming for the controller is made easy as the factory performs programming. This controller is ideal for small and medium projects with a complicated custom sequence of operation.

Features

» The Daikin WAGO BACnet/IP controller can be custom programmed to control external equipment or system based on custom sequences, such as custom AHU or water loop.
» The controller provides the two major following functionalities:
  » Application server: Can be controlled by a third party BMS or by the intelligent Touch Manager with BACnet Client Option.
  » Application client: Can control and monitor other BACnet controllers using the BACnet network communication.
» The controller can also be programmed to function as a standalone controller without the BACnet BACnet/IP communication.
The controller can handle up to 1,000 BACnet points.
» Connect up to 64 Inputs and Outputs (a combination of Analog Inputs, Analog Outputs, Digital Inputs, and Digital Outputs).
» Programmable features include multiple PID loops, staging sequence, lead-lag, duty time rotation, schedule function, alarms, trending, data logging, etc.
» Custom programming adds flexibility to the project’s sequence of operation.

The Daikin WAGO BACnet/IP Controller is commonly used for custom design AHU and water loop control when water-cooled VRV is used in a project. The Daikin WAGO BACnet/IP Controller can be used as a BACnet server or a BACnet client providing programming versatility.

This controller’s BACnet points can be monitored and controlled by using the intelligent Touch Manager BACnet Client. The controller’s onboard SD card allows custom programming with an optional trending feature.

Example: Controlling a water loop system (see on page 20)

When using the water-cooled VRV system, most projects require the additional scope to control other waterside equipment.
The Daikin BACnet/IP Controller can be used to control the

» Loop temperature
» Lead/Lag pump control
» Boiler control
» Dry cooler or fluid cooler control
» Pump speed control
» Cooling tower control

The following documentation is available from Daikin after an order is placed,

1. Pricing estimates for programming
2. WAGO hardware selection and node configuration
3. Reference wiring diagrams
4. Controller programming document which includes a specified sequence of operation and bill of materials.
5. intelligent Touch Manager BACnet configuration file
6. Startup documentation

Things to consider when selecting the WAGO BACnet/IP controller for your project,

1. Most applications if not all require additional field devices such as sensors, relays, switches, etc. These can be purchased through local distributors or online retailers.
2. The controller and its I/O modules must be mounted in a panel box; typically, the panel box is required to be built at a UL rated shop.
3. Installation and wiring of the controllers
4. Installation and wiring of field devices (such as sensors, actuators) to the controller is provided by others.
5. Creating contract drawings for the project (Daikin does not perform this).
6. Field commissioning time and site visits to troubleshoot the problem by commissioning technicians.

The field technician commissioning the WAGO BACnet Controller is recommended to have taken training classes offered by Daikin.
6. Budgeting for *iTM* as a Mini-BMS

When budgeting for a project with the *iTM* as a Mini-BMS be sure to consider items mentioned below.

<table>
<thead>
<tr>
<th>#</th>
<th>To be provided for the project</th>
</tr>
</thead>
</table>
| A  | *intelligent Touch Manager* with the *BACnet* Client Option  
1. *intelligent Touch Manager* DCM601A71  
2. *intelligent Touch Manager BACnet* Client software option DCM009A51  
3. 24VAC Power Supply  
4. Panel Box |
| B  | Network Switch (Field Provided)  
- If the *intelligent Touch Manager* ties into the building, then typically there is no need for a field provided switch. The building’s IT department will provide the required parts.  
- If a standalone network is created for building’s controls equipment, then a field provided switch is required,  
  - The switch is available from a local electronics store or online electronics store.  
  - The size of the switch is selected based on many units to be connected to the *BACnet/IP*. |
| C  | *BACnet/IP* or Ethernet Cable  
- Each *BACnet* device should have a CAT 5 Ethernet cable (field provided) between the device and the network switch.  
- Do not use power over Ethernet cables.  
- Each Ethernet cable segment cannot be greater than 328ft. |
| D  | 3rd party *BACnet/IP* controller  
- The 3rd party Rooftop Unit (RTU) and 3rd party Dedicated Outside Air System (DOAS) units that have a controller should be furnished with *BACnet/IP* communication capability.  
- Please note: For the third-party controller the *BACnet/IP* communication may be an add-on option, please check with the supplier of the third-party controller. |
| E  | Daikin *Rebel, Maverick* or *DVS*,  
- The factory furnished Microtech III controller will need a *BACnet/IP* communication module  
  Part number: 090016709.  
- Select the communication module from the Daikin Selection Tool. |
6. Budgeting for iTM as a Mini-BMS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| F | 3rd party controller with BACnet/MSTP option only  
  • A controller that only has a BACnet/MSTP option will require the use of third-party BACnet MS/TP to BACnet/IP router.  
  • BACnet/IP to BACnet/MSTP is available thru following the 3rd party manufacturers (please check with manufactures for current part number & compatibility)  
  1. Contemporary controls PN# BASRT-B  
  2. KMC PN# BAC5051-E |
| G | Estimate for WAGO I/O option  
  • WAGO selection: The WAGO parts can be selected by using the WAGO selection Tool.  
  • Panel or Enclosure  
  • Inputs and Output Wiring  
  • Communication Wiring  
  • Field Devices – Including sensors, transmitters, and damper motors, etc. |
| H | Estimating for Daikin WAGO BACnet/IP Controller  
  • WAGO selection: Bill of materials is provided by Daikin controls department  
  • Programming Cost: Programming cost estimate is provided by Daikin controls department  
  • Panel or enclosure  
  • Inputs and Output Wiring  
  • Field Devices – Including sensors, transmitters, and damper motors, etc.  
  • Startup and commissioning |
| I | Field commissioning and startup time |

Panel Box or Enclosure

A panel box or enclosure is used to house control components such as a WAGO Controller, its power modules, and power supply. This panel box is field provided. It is also common for the intelligent Touch Manager to be mounted on the door. If only the WAGO Controller is placed inside the enclosure, then a 6-inch depth panel box is used. If the intelligent Touch Manager is mounted on the door, along with the WAGO Controller, then the 8-inch enclosure is used. Make sure to check the NEMA rating required for the panel enclosure. Based on the local code it may be required that the panel be built-in UL rated shop. The below list provides common items that are housed in a panel other than WAGO and intelligent Touch Manager accessories.

1. Power supply  
2. Terminal Blocks  
3. Surge Protector  
4. Disconnect  
5. DIN RAIL  
6. Backplate  
7. Panduit  
8. Relays
7. Native intelligent Touch Manager Programming

7.1 Scheduling

The intelligent Touch Manager offers 4 different Schedule types to easily schedule a unit or system: 7 days, Weekdays + Saturday + Sunday (5+1+1), Weekdays + Weekends (5+2), Every day.

![New Schedule 001](image)

The iTM's offers rolling holiday function can be used with BACnet points. Example: July 4th Every year can be set as a holiday.

7.2 Interlock Programming Reference

Interlock programming provides automated control of third-party equipment as well as VRV indoor units. The interlock programming can be created between indoor unit management points, BACnet management points, and WAGO managements; any of these points can be used either as an input or an output. A maximum of 500 interlock programs can be created. These interlock programs can be simple or complex depending on the application. Below is an example of a simple interlock condition:

*Turn on the FCU -1 and FCU -2 if any of the lights 1A, 1B, 2A, 2B on the second floor is turned on for 60 seconds*
7. Native intelligent Touch Manager Programming

Format of an interlock condition,

<table>
<thead>
<tr>
<th>Input</th>
<th>Output 1</th>
<th>Output 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Input(s) Name</td>
<td>1 - Output(s) Name</td>
<td>1 - Output(s) Name</td>
</tr>
<tr>
<td>2 - Detection Condition</td>
<td>2 - Action</td>
<td>2 - Action</td>
</tr>
<tr>
<td>3 - Time delay</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

» Input Management Points: One or more management points can be added as the input to the interlock condition so its status can be used as a condition in the interlock.

» Detection Condition: Detection condition specifies the condition the input management has to satisfy to trigger the interlock condition.

Types of detection condition:

» Switch: Detects On/Off status of the management point
» Equipment Error: Detect error status of management point when configured.
» Analog lower/upper limit error detects the upper limit or lower limit error condition of an analog input.
» Operation Mode: This condition only applied to indoor unit management points to detect the operation mode of the indoor unit.
» Analog Value: This condition uses an analog value as a detection condition for other analog values. The condition can be a constant value or any analog management point.

» Time Delay: Specify the time delay for the duration that the input condition should be continuously valid before the interlock is a trigger. The setting ranges from 0 minutes to 30 minutes in a 1-minute interval. For analog values, 1 minute is the minimum setting.

» Evaluation: This setting determines how all the inputs are evaluated, the below are the settings available,

  » At least one input becomes valid.
  » All inputs become valid.
  » At least one input becomes invalid.
  » All inputs become invalid.

» Output 1: One or more management points can be added as the output to the interlock condition so its value can be changed per the action set.

» Output 2: This is an optional setting; typically used to reverse the interlock’s actions.

» Action: Specify the action to be taken for the management point based on interlock,

Example:

» ON/OFF, mode, Setpoint, RC Prohibits for indoor unit management points.
» On/Off for digital outputs or binary output
» Set a specific value for analog outputs
7. Native *intelligent Touch Manager* Programming

Now looking back at the example above, the interlock can be described by the below figure:

The below diagram shows the interlock programmed on the *intelligent Touch Manager*.

**Examples of various interlock programs**

» When the Lights are ON, turn on the corresponding indoor unit.
» When the indoor unit status is OFF, turn OFF the lights.
» When the outside air temperature is below 50°F, and the indoor unit is in error, turn on the emergency radiant heater.
» When the CO\textsubscript{2} level is greater than 1000ppm, turn on the exhaust & supply fans.
» When the outside air temperature drops below the predetermined setpoint, enable economizer.
» When CO\textsubscript{2} values generate an upper limit error, turn on exhaust & supply fans.
» When the indoor units are ON and in heating mode, enable humidifiers to maintain humidity setpoint.
Interlocking Analog Output

The programming for Analog Output signal using the *intelligent Touch Manager* is limited. The interlock only allows the analog output to be set to a specific value, hence only step control can be achieved; there is no advanced controls logic such as PID. There is a one-minute time delay when Analog Inputs are used in the input condition of the interlock.

Here is an example sequence of operation of step control interlock; (multiple interlocks are required for the below example),

1. **Two steps with modulating OA Damper:** When CO₂ is greater than 900ppm; set the OA damper position to 100%. If the CO₂ drops below 500ppm; set the OA damper to 50%.

2. **Three steps with OA Damper:** The conference room CO₂ level is monitored using a CO₂ sensor. If the CO₂ is higher than 800 ppm, open the OA damper to 50%, and if the CO₂ level is still higher than 800ppm for 5 minutes, open OA damper to 100%. If the CO₂ level is less than 500 ppm for at least 5 minutes, the damper shall be at a minimum position of 20%.

3. **Two steps with variable fan speed:** When CO₂ is greater than 900ppm, set the fan speed to 100%. If the CO₂ drops below 500ppm; set the fan speed to 50%.

Typical interlock could take 40 seconds to execute.

If it is determined that an advanced programming sequence of operation is required, then Daikin WAGO BACnet/IP Controller is required.

7.3 Email and Alarming

1. The *intelligent Touch Manager* monitors alarms and warning for VRV, BACnet points, WAGO I/O points.

2. The *iTM* can send out email alerts of alarms occurring in the system. With the correct network settings, the *iTM* can send an E-mail containing the date/time of occurrence, error code, and other information to predefined E-mail addresses if an equipment error or analog upper/lower limit error occurs in a management point.

3. Additionally, the *intelligent Touch Manager* logs all errors occurring in the system for review later. The history file which is downloadable by a USB or by remote access can contain up to 500,000 items. An example of history is shown to the right.
8. **WAGO Overview**

The *WAGO* node consists of an *iTM* Basic Kit which includes a power supply, BUS coupler, connector, and an end module. I/O modules are added to the node based on the application requirement. A *WAGO* node can also be created with *WAGO BACnet/IP* Controller, end module, and I/O modules.

The *WAGO* is powered using a 24VDC power supply. The power supply part number is 787-712; it supplied by Daikin either as a part of *iTM* basic kit (PN# 60359653) or separately when using it with the *WAGO BACnet/IP* Controller. The *WAGO* controller mounts to a 35mm DIN RAIL system so that it can mounted in a field provided panel.

Components of an I/O module include status LED, markers, K-bus contacts, power jumper contacts, and cage clamp connections.
Power jumper contacts consist of blade and spring contacts built into the sides of modules. Depending on the module type and features, the contact configuration varies.

Power jumper contacts of adjacent I/O modules must be compatible (i.e., blade contacts must have corresponding spring contacts).

**PROBLEM**

These two modules cannot be adjacent to each other as shown. The left module does not have a lower spring contact for the right module’s lower blade.

**SOLUTION**

Rearrange the node to remove this incompatibility (swap modules) or insert a supply module between them. A supply module has 0 blade contacts and 3 spring contacts.
8. **WAGO Overview**

Communication between the Fieldbus coupler/controller and the I/O modules as well as the system supply of the I/O modules is carried out via the internal bus. It is comprised of 6 data contacts, which are available as self-cleaning gold spring contacts. To avoid soiling or scratching, do not lay the I/O modules on the gold spring contacts.

Landing wires on a **WAGO** module:
All modules use **WAGO CAGE CLAMP** connections. This connection is appropriate for solid, stranded, and fine stranded conductors. Each clamping unit accommodates one conductor. The **WAGO CAGE CLAMP** connections provide fast and easy wiring. The connections are vibration resistant.

1. Insert a screwdriver or operating tool in the opening above the connection point.
2. The screwdriver blade holds the clamping spring open. Insert the conductor into the connection point.
3. Withdraw the screwdriver – the conductor is securely clamped.
9. PICS for *iTM BACnet* Client

Date: 1st April, 2012
Vendor Name: DAIKIN INDUSTRIES, Ltd.
Product Name: *intelligent Touch Manager (iTM)*
Product Model Number: DCM601A71
Application Software Version: 2.04.00
Firmware Revision: 000.001
*BACnet* Protocol Revision: 4

**Product Description:** This product provides the functions as a *BACnet* operator workstation to control and monitor the other *BACnet* server devices.

**BACnet Standardized Device Profile (Annex L):** *BACnet Operator Workstation (B-OWS)*

**BACnet Interoperability Building Blocks Supported (Annex K):**

<table>
<thead>
<tr>
<th>Supported BIBBs</th>
<th>BIBB Name</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>STANDARD</td>
</tr>
<tr>
<td>Data Sharing</td>
<td>DS-RP-A Data Sharing-ReadProperty-A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DS-RP-B Data Sharing-ReadProperty-B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DS-RPM-A Data Sharing-ReadPropertyMultiple-A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DS-RPM-B Data Sharing-ReadPropertyMultiple-B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DS-WP-A Data Sharing-WriteProperty-A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DS-COBU-B Data Sharing-COV-Unsolicited-B</td>
<td></td>
</tr>
<tr>
<td>Device Management</td>
<td>DM-DDB-A Device Management-Dynamic Device Binding-A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM-DDB-B Device Management-Dynamic Device Binding-B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM-DOB-B Device Management-Dynamic Object Binding-B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM-TS-A Device Management-Time Synchronization-A</td>
<td></td>
</tr>
</tbody>
</table>

**Segmentation Capability:**
- □ Able to transmit segmented messages
- ■ Able to receive segmented messages

**Window Size __________**

**Standard Object Types Supported:**

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Creatable</th>
<th>Delectable</th>
<th>Optional Object properties supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Object</td>
<td>No</td>
<td>No</td>
<td>Max_Segment_Accepted, Local_Time, Local_Date, APDU_Segment_Timeout</td>
</tr>
</tbody>
</table>
## 9. PICS for iTM BACnet Client

The following objects can be monitored and controlled by the intelligent Touch Manager with BACnet Client software option based on object list available at a BACnet server.

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Creatable</th>
<th>Delectable</th>
<th>Optional Object properties supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog Input</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
<tr>
<td>Analog Output</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
<tr>
<td>Analog Value</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
<tr>
<td>Binary Input</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
<tr>
<td>Binary Output</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
<tr>
<td>Binary Value</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
<tr>
<td>Multistate Input*</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
<tr>
<td>Multistate Output*</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
<tr>
<td>Multistate Value*</td>
<td>No</td>
<td>No</td>
<td>Present Value, Status_Flag</td>
</tr>
</tbody>
</table>

* Up to 10 states.

Data Link Layer Options: BACnet IP, (Annex J)

Device Address Binding:
Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)
- Yes
- No

Networking Options:
- Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)
  - Does the BBMD support registrations by Foreign Devices?
  - Yes
  - No
  - Does the BBMD support network address translation?
  - Yes
  - No

Character Sets Supported:
Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ANSI X3.4
- IBM®/Microsoft™ DBCS
- ISO 8859-1
- ISO 10646 (UCS-2)
- ISO 10646 (UCS-4)
- JIS X 0208

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:
- Not Applicable
10. Appendix-1

Appendix-1: List of Operation Data Indoor Units and Outdoor Units

A. Indoor Unit Operation Data

<table>
<thead>
<tr>
<th>#</th>
<th>Point Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discharge Air Temperature</td>
<td>Monitors and displays the discharge air temperature of the FXMQ_PB indoor unit. (displays zero all other units)</td>
</tr>
<tr>
<td>2</td>
<td>Liquid Pipe Temperature</td>
<td>Monitors and displays the liquid pipe temperature.</td>
</tr>
<tr>
<td>3</td>
<td>Gas Pipe Temperature</td>
<td>Monitors and displays the gas pipe temperature.</td>
</tr>
<tr>
<td>4</td>
<td>EEV Position</td>
<td>Monitors and displays the electronic expansion valve position.</td>
</tr>
<tr>
<td>5</td>
<td>Freeze Protection</td>
<td>Monitors if the freeze protection is active for FXFQ_T, FXUQ_P, or FXEQ_P indoor unit. (displays Off all other units)</td>
</tr>
<tr>
<td>6</td>
<td>Return Air Temperature</td>
<td>Monitor and displays the return air temperature.</td>
</tr>
</tbody>
</table>

B. General Outdoor Unit Operation Data

<table>
<thead>
<tr>
<th>#</th>
<th>Point Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Communication Status</td>
<td>Monitors and displays the communication status</td>
</tr>
<tr>
<td>2</td>
<td>Operation Mode</td>
<td>Monitors and displays the operation mode (Cool, Heat, Fan or Heat &amp; Cool)</td>
</tr>
<tr>
<td>3</td>
<td>Outdoor Unit Alarm Status</td>
<td>Monitors whether or not the outdoor unit is operating normally.</td>
</tr>
<tr>
<td>4</td>
<td>Defrost Mode</td>
<td>Monitors if the defrost mode is active.</td>
</tr>
<tr>
<td>5</td>
<td>Oil Return Mode</td>
<td>Monitors whether or not the outdoor unit is in oil return operation.</td>
</tr>
<tr>
<td>6</td>
<td>Electric Power</td>
<td>Monitors and displays the electric power. Calculated</td>
</tr>
<tr>
<td>7</td>
<td>Electric Current</td>
<td>Monitors and displays the electric current. Calculated</td>
</tr>
<tr>
<td>8</td>
<td>System Capacity Code</td>
<td>Monitors and displays the system capacity code.</td>
</tr>
<tr>
<td>9</td>
<td>Outdoor Air Temperature</td>
<td>Monitors and displays the outdoor air temperature.</td>
</tr>
</tbody>
</table>

C. Outdoor Unit Operation for each condenser module*

<table>
<thead>
<tr>
<th>#</th>
<th>Point Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Condensing Pressure</td>
<td>Monitors and displays the condensing pressure</td>
</tr>
<tr>
<td>2</td>
<td>Evaporating Pressure</td>
<td>Monitors and displays the evaporating pressure</td>
</tr>
<tr>
<td>3</td>
<td>Condensing Temperature</td>
<td>Monitors and displays the condensing temperature</td>
</tr>
<tr>
<td>4</td>
<td>Evaporating Temperature</td>
<td>Monitors and displays the evaporating temperature</td>
</tr>
<tr>
<td>5</td>
<td>Inverter Compressor 1 Speed</td>
<td>Monitors and displays the speed of the inverter compressor1</td>
</tr>
<tr>
<td>6</td>
<td>Inverter Compressor 2 Speed</td>
<td>Monitors and displays the speed of the inverter compressor2</td>
</tr>
<tr>
<td>7</td>
<td>Fan Step</td>
<td>Monitors and displays the fan step</td>
</tr>
<tr>
<td>8</td>
<td>EV Position 1</td>
<td>Monitors and displays the position of the expansion valve1</td>
</tr>
<tr>
<td>9</td>
<td>EV position 2</td>
<td>Monitors and displays the position of the expansion valve2</td>
</tr>
</tbody>
</table>
10. Appendix-1

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Hot Gas Temperature (Compressor 1)</td>
<td>Monitors and displays the hot gas temperature of the compressor1</td>
</tr>
<tr>
<td>11</td>
<td>Hot Gas Temperature (Compressor 2)</td>
<td>Monitors and displays the hot gas temperature of the compressor2</td>
</tr>
<tr>
<td>12</td>
<td>Liquid Pipe Temperature</td>
<td>Monitors and displays the liquid pipe temperature</td>
</tr>
<tr>
<td>13</td>
<td>Liquid Pipe Temperature (HX Upper)</td>
<td>Monitors and displays the liquid pipe temperature for the upper HX</td>
</tr>
<tr>
<td>14</td>
<td>Liquid Pipe Temperature (HX Lower)</td>
<td>Monitors and displays the liquid pipe temperature for the lower HX</td>
</tr>
<tr>
<td>15</td>
<td>Liquid Pipe Temperature (De-Icer)</td>
<td>Monitors and displays the liquid pipe temperature for the de-icer</td>
</tr>
<tr>
<td>16</td>
<td>Gas Pipe Temperature (HX Upper)</td>
<td>Monitors and displays the gas pipe temperature for the upper HX</td>
</tr>
<tr>
<td>17</td>
<td>Gas Pipe Temperature (HX Lower)</td>
<td>Monitors and displays the gas pipe temperature for the lower HX</td>
</tr>
<tr>
<td>18</td>
<td>Suction Temperature</td>
<td>Monitors and displays the suction temperature</td>
</tr>
<tr>
<td>19</td>
<td>Compressor Suction Temperature</td>
<td>Monitors and displays the compressor’s suction temperature</td>
</tr>
<tr>
<td>20</td>
<td>Subcool Inlet Temperature</td>
<td>Monitors and displays the subcool inlet temperature</td>
</tr>
<tr>
<td>21</td>
<td>Subcool Outlet temperature</td>
<td>Monitors and displays the subcool outlet temperature</td>
</tr>
<tr>
<td>22</td>
<td>Subcool EV Position</td>
<td>Monitors and displays the subcool expansion valve position</td>
</tr>
<tr>
<td>23</td>
<td>Target Evaporator Temperature</td>
<td>Monitors and Displays the target evaporator temperature</td>
</tr>
<tr>
<td>24</td>
<td>Target Confessing Temperature</td>
<td>Monitor and Displays the target condensing temperature</td>
</tr>
</tbody>
</table>

*Points Availability varies based on the outdoor unit model type.*
Appendix-2: IT Network Requirements

The *intelligent Touch Manager* can be connected to the network to take advantages of the following features and options,

» Remote Access  
» Email Alerts  
» *BACnet* Client option  
» *BACnet* Server/Gateway option  
» D-Net Monitoring

When connecting the *intelligent Touch Manager* to any network, the following IPv4 static IP address* settings are required and should be requested from building IT person.

1. IP Address  
2. Subnet Mask  
3. Default Gateway

In addition to the above settings, the additional settings may be required such as DNS address and a communication port.

If an IT person does not manage the building, all the network settings will have to be made by the startup technician. This will be a dedicated network and to connect a dedicated network to the internet there two options,

1. A dedicated public IP address from the internet provider.  
2. 3G/4G modem with a cellular connection.

When using *BACnet* communication and the remote access features of the *iTM*, then IP NAT addressing or port forwarding may be required which should be set up by an IT person.

*The *intelligent Touch Manager* does not support DHCP or IPv6.*
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BACnet™</strong></td>
<td><em>BACnet</em> is a communications protocol for Building Automation and Control (BAC) networks that leverage the ASHRAE, ANSI, and ISO 16484-5 standard protocol.</td>
</tr>
<tr>
<td><strong>BTL</strong></td>
<td><em>BACnet</em> Testing Laboratories was established by <em>BACnet</em> International to support compliance testing and interoperability testing activities.</td>
</tr>
<tr>
<td><strong>BACnet Client</strong></td>
<td><em>BACnet</em> Client is a <em>BACnet</em> device that can control and monitor other <em>BACnet</em> servers in the building. Example: Building Management System (BMS).</td>
</tr>
<tr>
<td><strong>BACnet Point</strong></td>
<td>Refer to data points that are created by the programming in a <em>BACnet</em> Network, these typically calculated values such as setpoint, target values.</td>
</tr>
<tr>
<td><strong>BACnet Server</strong></td>
<td><em>BACnet</em> server is a <em>BACnet</em> device that can be controlled or monitored by a Building Management System. Example: Rooftop Controller.</td>
</tr>
<tr>
<td><strong>BMS (Building Management System)</strong></td>
<td>A system for building management activities such as HVAC control, lighting control, fire, energy, and security.</td>
</tr>
<tr>
<td><strong>BTL Certification</strong></td>
<td>BTL Certification provides certification of conformance for <em>BACnet</em> features implemented on a device.</td>
</tr>
<tr>
<td><strong>D3-NET</strong></td>
<td>A proprietary communication network developed by Daikin.</td>
</tr>
<tr>
<td><strong>Direct Digital Control (DDC)</strong></td>
<td>Direct Digital Control is automation control of equipment or a process by an electronic controller based on its programming.</td>
</tr>
<tr>
<td><strong>DOAS</strong></td>
<td>Dedicated Outside Air Unit or 100% outside air unit.</td>
</tr>
<tr>
<td><strong>DZK</strong></td>
<td>Daikin Zoning Kit; A multi-zone variable volume solution for the <em>VRV</em>.</td>
</tr>
<tr>
<td><strong>Hardwire Point</strong></td>
<td>Refers to any physically wired sensor or field devices.</td>
</tr>
<tr>
<td><strong>MS/TP</strong></td>
<td>Master-slave - Token Passing, A communication type for the <em>BACnet</em> communication.</td>
</tr>
<tr>
<td><strong>POP Before SMTP</strong></td>
<td>It is a type of authentication scheme used by a mail server.</td>
</tr>
<tr>
<td><strong>SMTP</strong></td>
<td>Simple Mail Transfer Protocol (SMTP) is an Internet standard for electronic mail (email) transmission.</td>
</tr>
<tr>
<td><strong>SMTP=AUTH</strong></td>
<td>It is a type of authentication scheme used by a mail server.</td>
</tr>
<tr>
<td><strong>VRV</strong></td>
<td>Variable Refrigerant Volume.</td>
</tr>
<tr>
<td><strong>IP Address</strong></td>
<td>IP is an identifier for a controller and a computer on a TCP/IP network. An IP address consists of four sets of numbers from 0 to 255, separated by three dots. Example: 172.20.15.44.</td>
</tr>
<tr>
<td><strong>DHCP</strong></td>
<td>Stands for &quot;Dynamic Host Configuration Protocol.&quot; DHCP is a protocol that automatically assigns a unique IP address to each device that connects to a network. With DHCP, there is no need to assign IP addresses to new devices manually. Not supported by <em>intelligent Touch Manager</em>.</td>
</tr>
<tr>
<td><strong>Static IP Address</strong></td>
<td>A static Internet Protocol (IP) address (static IP address) is a permanent number assigned to a computer or controller by a Network Administrator. A static IP address is required for the <em>intelligent Touch Manager</em>.</td>
</tr>
<tr>
<td><strong>NAT</strong></td>
<td>Network Address Translation (NAT). NAT is a method of remapping an IP address onto another IP address. This method is used when a local network IP address is remapped to a more global IP address to provide access.</td>
</tr>
</tbody>
</table>
WARNING

» Only qualified personnel must complete the installation.

» Consult your Daikin dealer regarding relocation and reinstallation of the remote controller. Improper installation may result in electric shock or fire.

» Electrical work must be performed in accordance with relevant local and national regulations, and with the instructions in this installation manual. Improper installation may cause electric shock or fire.

» Only use specified accessories and parts for installation. Failure to use specified parts may result in electric shock, fire, or controller damage.

» Do not disassemble, reconstruct, or repair. Electric shock or fire may occur.

» Only use specified wiring and verify all wiring is secured. Assure no external forces act on the terminal connections or wires. Improper connections or installation may result in electric shock or fire.

» Confirm power to the unit is OFF before touching electrical components.
About Daikin:

Daikin Industries, Ltd. (DIL) is a global Fortune 1000 company which celebrated its 95th anniversary in May 2019. The company is recognized as one of the largest HVAC (Heating, Ventilation, Air Conditioning) manufacturers in the world. 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.