

# ENHANCE YOUR HVAC SYSTEM WITH MARUTTO P-SERIES PLANTROOM CONTROLLER



Energy consumption in buildings, particularly from HVAC systems, is significant, accounting 45-60% of total energy usage. Inefficient HVAC operation not only waste energy but also contributes to excessive carbon emissions. To address this challenge, the MARUTTO P-Series offers an innovative solution designed to optimise HVAC Systems efficiency, reduce energy consumption, and minimise enviromental impact.

Introducing **MARUTTO P-Series**, now featuring our advanced **DMC Controller** paired with the versatile **DMT IO Expansion Module**.

This cutting edge combination delivers unparalleled compatibility to enhance your HVAC systems. The DMT IO Modules seamless integrate with the DMC Controller, enabling high-speed input/output processing for precise and efficient plant control and monitoring.

## Overall Benefit:

- **Maximise equipment and plant efficiency**
- **Streamline installation and reduce engineering efforts**
- **Simplified maintenance and service support for optimised HVAC performance**
- **Lower carbon emission**

# Plant Enabled Controller

Daikin DMC Controller is an intelligent device designed to communicate with and collect data from plant equipment. It comprises several key connection components and features:

- PJ Communication bus (Panel Bus and Field Bus)
- 2x RS-485 Ports
- 2x Ethernet LAN Ports
- High Powered CPU and Memory
- Modular Design for Touchscreen and Communication Devices



## Benefits

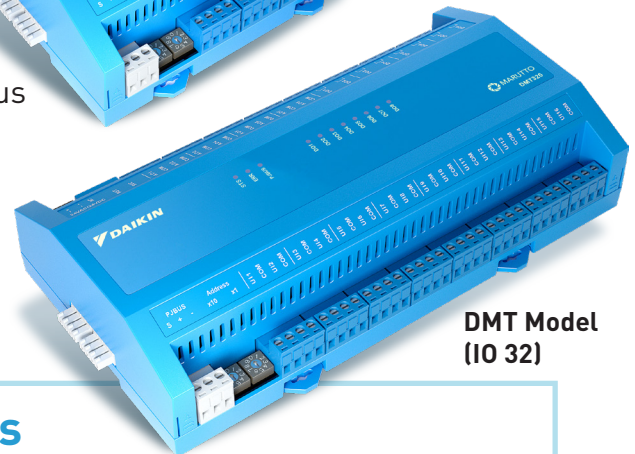
- **High-speed IO Modules Communication:** Supports serial communication at speeds up to 500 Kbps.
- **Versatile Serial Connections:** Offers 2 configurable serial ports, supporting BACnet MSTP or Modbus RS485.
- **Third-Party Integration:** Seamlessly integrates with third-party devices.
- **Remote Connection through Internet Connectivity:** Supports web serving, directly from DMC Controller to host and display HTML5 based graphics on standard web browsers.

## IO Module: Flexible Expansion for Enhanced Connectivity

Daikin DMT IO Module allows native connection to various HVAC systems equipment, including Chiller Plantroom (Chillers, Pump and Cooling Tower), Air Handling Units, Heat pumps, Ventilation Systems, Lighting control without requiring a separate configuration tool.



DMT Model  
(IO 16)



DMT Model  
(IO 32)

### Key Components:

#### IO 16 Module:

1. 8 x Universal Inputs (Configurable as Resistive, Current or Voltage)
2. 4 x Normally Open (NO) Relay Outputs
3. 4 x Analog Outputs (0-10VDC)

#### IO 32 Module:

1. 16 x Universal Inputs (configurable as Digital Input, Analog Input, 0-10VDC, or Current Input)
2. 8 x Normally Open (NO) Relay Outputs
3. 8 x Analog Outputs (0-10VDC)

## Benefits

- **Versatile Connectivity:** Long Range/ Distance IO Module Connection up to 1000 metres
- **High-Speed Processing:** Suitable for bulk IO point monitoring and control applications, including high-speed input pulse counting.
- **Versatile Expansion:** Independent PJ Bus Expansion through Panel Base (Direct connection) or Field Bus (Twisted pair Cabling) for up to 448 IO points.



powered by

niagara  
framework®

- MARUTTO P-Series is powered by Niagara 4.
- Niagara is a robust, open IoT platform designed to normalise data from any protocol.
- Niagara is a Globally recognised and leading BMS Software Solution designed to normalise disparate building data allowing for HVAC System Optimisation and Control.

## Key Features of Niagara 4:

- Built with a modern HTML5-based UX framework, Niagara offers customisable dashboards that allow users to tailor their interface according to their needs. It provides advanced visualisation tools, enabling detailed data representation through powerful charting and graphical capabilities.
- Niagara supports comprehensive data tagging, enabling efficient data management and streamlined tag-based navigation, simplifying the process of locating and organising information.
- Provides repeatable data cleansing capabilities to ensure clean and accurate data.
- Allows easy HVAC System application templating.

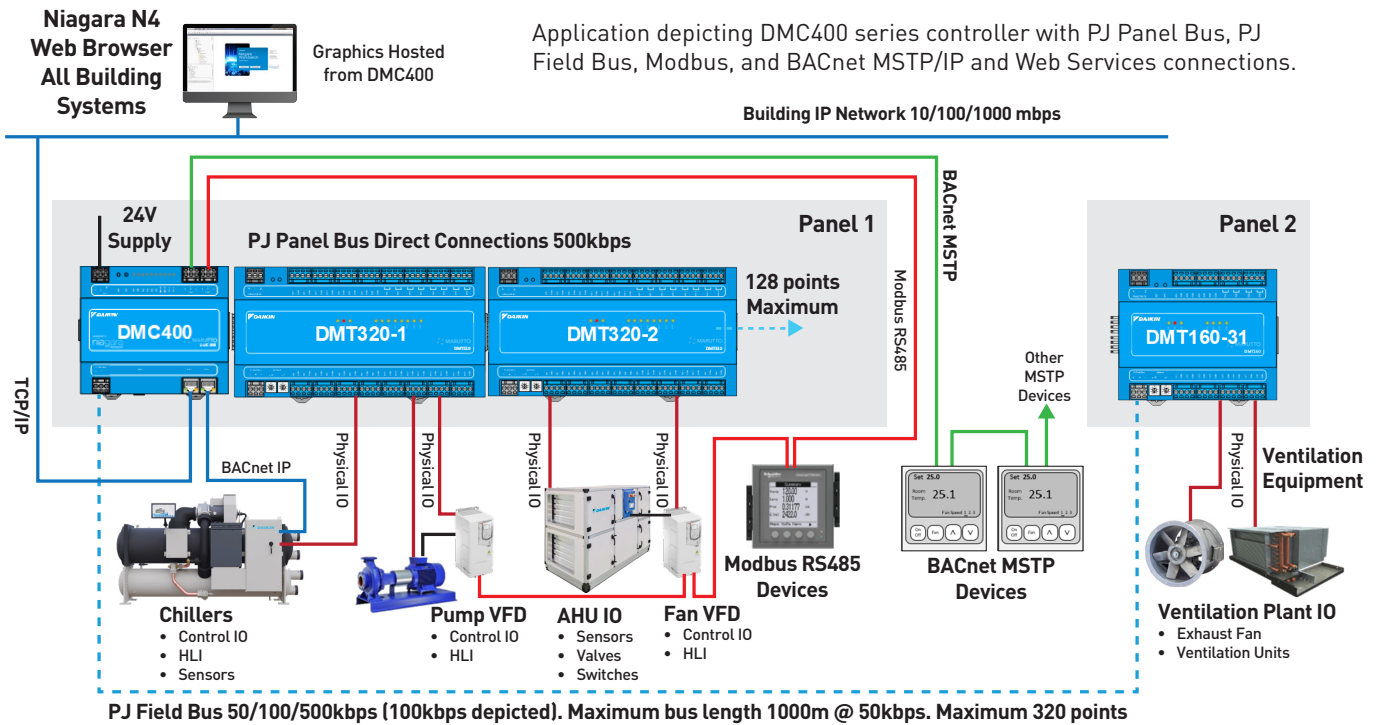
**MARUTTO P-Series powered by Niagara 4 enables an enhanced cockpit for comprehensive command and control over HVAC systems throughout a building, ensuring reliable and energy-efficient operations at all times.**



iPlantManager by Daikin provides next generation AI/ML Chiller plant Optimisation. To enable this within the facility, MARUTTO P-Series powered by Niagara 4 is the ideal choice to untap the full potential for building decarbonisation.



**Total Plant Ownership  
and Optimisation**



## DMC 400 At a Glance

| Item       | Description                                  | Details  |
|------------|--|--|
| Model Name |  | DMC400A8G  |
| Hardware   | Power Supply                                 | Class 2 Device<br>24VAC +20% / -15%<br>24VDC +/-3%   |
|            | Power Consumption                            | 9.6VA AC/300mA DC (no PJ Panel Bus Direct modules connected)   |
|            | Processor                                    | Quad-core Cortex-A53 (ARMv8) 64-bit SoC * 1.4GHz   |
|            | Memory -RAM                                  | 2GB DDR4 SDRAM   |
|            | Memory -Flash                                | 8GB eMMC storage   |
|            | Ethernet Communication Ports                 | Ethernet Ports x 2 10/100/1000 Mbps<br>(1GB connection not presently used)   |
|            | Serial communications ports                  | 2 x RS-485 - Modbus RS485, BACnet MSTP.<br>Isolated ports. Supports baud rates up to 1000kbps (1mbps)  |
|            | PJ Panel Bus port for DMT Expansion Modules. | Maximum of 128 IO points per PJ Panel Bus network connection<br>Preferred baud rate @500kbps   |
| Software   | PJ Field Bus port for DMT Expansion Modules. | Maximum of 320 IO points per PJ Field Bus network connection.<br>Baud rate selectable between 50/100/500kbps   |
|            | Framework                                    | Niagara N4 Framework, developed by Tridium<br>Fox Protocol - Workbench/Web Browser - Common programming tool   |
|            | Protocol Supported                           | Niagara Protocol (Fox, Foxs), BACnet, Modbus, Web & oBIX   |
| Compliance | Others                                       | HTML5 web user interface running Niagara 4 Framework<br>Supports JAVA Web Start without JAVA Plug-ins<br>Supports e-mail service SMTP Protocol<br>Supports SNMP (Simple Network Management Protocol) |
|            | North America                                | UL 60730 Energy Management Equipment<br>FCC 47 CFR Class B, Part 15, Sub-Part B, ICES-003<br>c-UL Canada   |
|            | Europe                                       | IEC 60730, EMC   |
|            | UK   | IEC 60730, EMC   |
|            | Oceania RCM                                  | IEC 60730, EMC/AS/NZS CISPR 32:2015 AMD 1:2020   |
| Enviroment | Others                                       | RoHS, WEEE, REACH, BACnet Testing Laboratory**   |
|            | Operating Temperature                        | 0°C ~ 60°C   |
|            | Storage Temperature                          | -20°C ~ 65°C   |
| Mechanical | Operating Humidity                           | 10% ~ 90% RH, non-condensing   |
|            | Dimension                                    | 138mm x 120mm x 50mm   |
|            | Weight                                       | 900 grams  |
|            | Material                                     | Base: Plastic<br>Cover: Plastic  |
|            | Mounting                                     | 35mm DIN rail mount options standard and keyhole slots   |
|            | IP Rating                                    | IP20   |
|            | Cooling                                      | Internal air convection  |

## IO-16 & IO-32 At a Glance

| Item       | Description           | Details  |                                |
|------------|-----------------------|--|--------------------------------|
| Model Name |                       | DMT160A8G  | DMT320A8G                      |
| Hardware   | Power Supply          | Class2<br>24VAC +20% / -15%<br>24VDC +/-3%   |                                |
|            | Power Consumption     | Up to 24VA   |                                |
|            | Processor             | GigaDevice ARM Cortex M4 @ 72 MHz  |                                |
|            | RAM                   | 64kb   |                                |
|            | Flash Memory          | 512kb  |                                |
|            | Communication Ports   | 2 x PJ Panel Bus connectors<br>1 x PJ Field Bus terminal block connector   |                                |
|            | Universal Input       | 12-bit ADC with PGA<br>Resistance - 500 Ohm ~ 300K Ohm, 3% accuracy<br>Voltage - 0-10VDC, 3% accuracy<br>Current - 0-20mA, 3% accuracy<br>Pulse Count - up to 30Hz at 50% duty cycle<br>Digital - voltage free dry contact |                                |
|            | Analog Output         | 12bit DAC<br>Voltage Mode<br>0-10VDC, 3% accuracy<br>Min load impedance 1,000 Ohm at 10mA max  |                                |
| Compliance | Digital Output        | Built in onboard LED indicator<br>Voltage Free SPST Normally Open Relay Contact<br>48VA / 2A at 24VAC  |                                |
|            | North America         | UL 60730 Energy Management Equipment<br>FCC 47 CFR Class B, Part 15, Sub-part B, ICES-003 Issue 7<br>c-UL Canada   |                                |
|            | Europe                | IEC 60730, EMC   |                                |
| Enviroment | UK                    | IEC 60730, EMC   |                                |
|            | Oceania RCM           | IEC 60730, EMC/AS/NZS CISPR 32:2015 AMD 1:2020   |                                |
|            | Others                | RoHS, WEEE, REACH  |                                |
|            | Operating Temperature | 0°C ~ 60°C   |                                |
|            | Storage Temperature   | -20°C ~ 65°C   |                                |
| Mechanical | Operating Humidity    | 10% ~ 90% RH, non-condensing   |                                |
|            | Dimension             | 145mm x 120mm x 50mm   | 240mm x 120mm x 50mm (overall) |
|            | Weight                | 400 grams  | 600 grams                      |
|            | Material              | Base: Plastic<br>Cover: Plastic  |                                |
|            | Mounting              | 35mm DIN rail mount options standard and keyhole slots   |                                |
|            | IP Rating             | IP20   |                                |
|            | Cooling               | Internal air convection. Mount horizontally  |                                |

Legend

\*\* Testing in progress

If you have any enquiries, please contact your local sales office.

Specifications, designs and other content appearing in this catalogue are correct as of March 2025 and subject to change without notice.