

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.

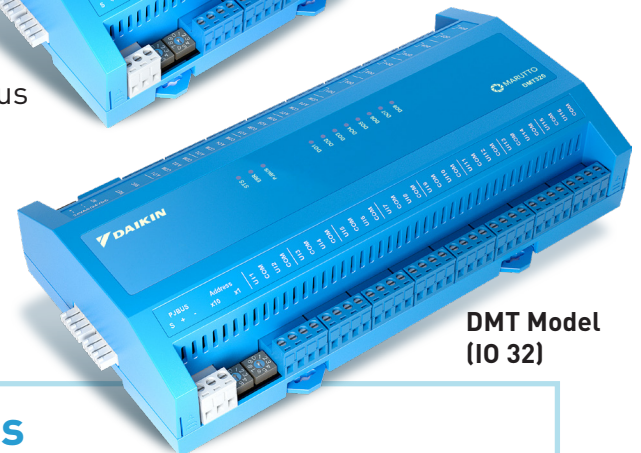
Key Components:

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

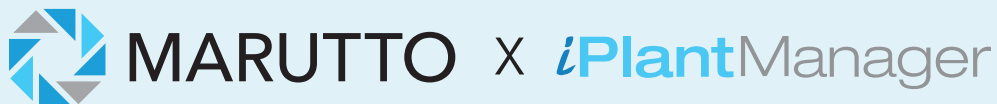
niagara
framework®

- 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.

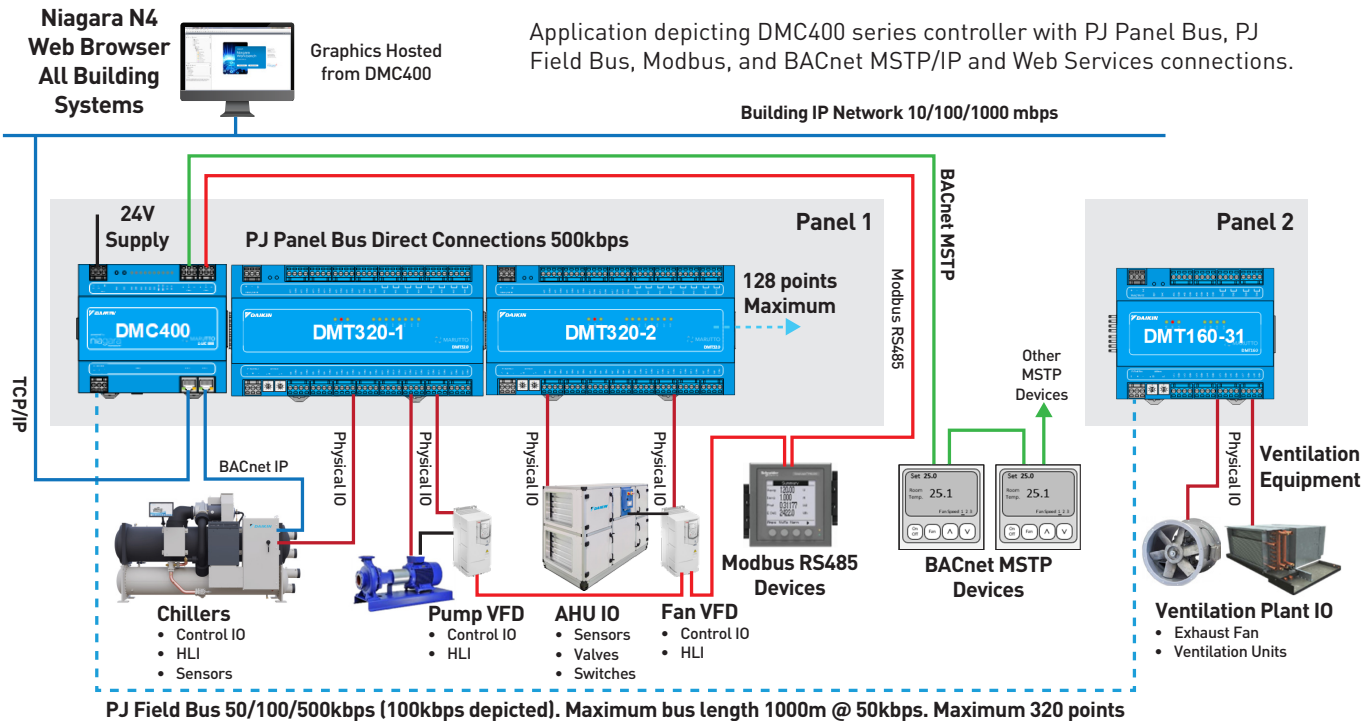
MARUTTO P-Series powered by Niagara 4 enables an enhanced cockpit for comprehensive command and control over HVAC systems throughout a building, ensuring reliable and energy-efficient operations at all times.



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 24VAC +20% / -15% 24VDC +/-3%
	Power Consumption	9.6VA AC/300mA DC. When supplying 4 x PU to PJ Panel Bus max consumption is 60VA AC or 700mA DC
	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 (1GB connection not presently used)
	Serial communications ports	2 x RS-485 - Modbus RS485, BACnet MSTP. Isolated ports. Supports baud rates up to 1mbps. Device & Points limits are based on the purchased Niagara licence features
	PJ Panel Bus port for DMT Expansion Modules.	Maximum of 128 IO points per PJ Panel Bus network connection. Recommended maximum of 128 IO points per PJ Panel Bus network connection. Baud rate @500kbps. Consider Niagara licence features
	PJ Field Bus port for DMT Expansion Modules.	Recommended maximum of 320 IO points per PJ Field Bus network connection. Baud rate selectable between 50/100/500kbps. Consider Niagara licence features
Software	Framework	Niagara N4 Framework, developed by Tridium Fox Protocol - Workbench/Web Browser - Common programming tool
	Protocol Supported	Niagara Protocol (Fox, Foxs), BACnet, Modbus, Web & oBIX
	Others	HTML5 web user interface running Niagara 4 Framework Supports JAVA Web Start without JAVA Plug-ins Supports e-mail service SMTP Protocol Supports SNMP (Simple Network Management Protocol)
Compliance	North America	UL 60730 Energy Management Equipment FCC 47 CFR Class B, Part 15, Sub-part B, ICES-003 Issue 7 c-UL Canada
	Europe	IEC 60730, EMC
	UK CA	IEC 60730, EMC
	Oceania RCM	IEC 60730, EMC AS/NZS CISPR 32:2015 AMD1:2020
Enviroment	Others	RoHS, WEEE, REACH, BACnet Testing Laboratory*
	Operating Temperature	-20°C ~ 60°C
	Storage Temperature	-40°C ~ 65°C
	Operating Humidity	10% ~ 90% RH, non-condensing
Mechanical	IP Rating	IP20
	Cooling	Internal air convection
	Dimension	138mm x 120mm x 50mm
	Weight	Unit Weight: 295 grams Packed Weight 350 grams
Mechanical	Material	Base: Plastic Cover: Plastic
	Mounting	35mm DIN rail mount options standard and keyhole slots

IO-16 & IO-32 At a Glance

Item	Description	Details	
Model Name		DMT160A8G	DMT320A8G
Hardware	Power Supply	Class2 24VAC +20% / -15% 24VDC +/-3%	
	Power Consumption	4.8VA AC/120mA DC or 1.0 x Power Unit (1PU)	8.4VA AC/200mA DC or 2 x Power Unit (2PU)
	Processor	GigaDevice ARM Cortex M4 @ 72 MHz	
	RAM	64kb	
	Flash Memory	512kb	
	Communication Ports	2 x PJ Panel Bus connectors 1 x PJ Field Bus terminal block connector	
	Universal Input	12-bit ADC with PGA Resistance - 500 Ohm ~ 300K Ohm, 3% accuracy Voltage - 0-10VDC, 3% accuracy Current - 0-20mA, 3% accuracy Pulse Count - up to 30Hz at 50% duty cycle minimum pulse width 16.6ms. (Counter totalization stored on module) Digital - voltage free dry contact	
	Analog Output	12bit DAC Voltage Mode 0-10VDC, 3% accuracy Min load impedance 1,000 Ohm at 10mA max	
Compliance	Digital Output	Built in onboard LED indicator Voltage Free SPST Normally Open Relay Contact 48VA / 2A at 24VAC	
	North America	UL 60730 Energy Management Equipment FCC 47 CFR Class B, Part 15, Sub-part B ICES-003 Issue 7 c-UL Canada	
	Europe CE	IEC 60730, EMC	
	UK CA	IEC 60730, EMC	
Enviroment	Oceania RCM	IEC 60730, EMC AS/NZS CISPR 32:2015 AMD1:2020	
	Others	RoHS, WEEE, REACH	
	Operating Temperature	-20°C ~ 60°C	
	Storage Temperature	-40°C ~ 65°C	
Mechanical	Operating Humidity	10% ~ 90% RH, non-condensing	
	IP Rating	IP20	
	Cooling	Internal air convection. Mount horizontally	
	Dimension	145mm x 120mm x 50mm	230mm x 120mm x 50mm
Mechanical	Weight	315 grams	~504 grams
	Packed Weight	370 grams	~580 grams
	Material	Base: Plastic Cover: Plastic	
Mechanical	Mounting	35mm DIN rail mount options standard and keyhole slots	

Legend
* Testing in progress

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