# CITYMULTI® Model: DC-A2IO Advanced HVAC Controller

MITSUBISHI ELECTRIC

| Job Name: | |
|---|---|
| Schedule Reference: | Date: |




## DC-A2IO Advanced HVAC Controller Package

- PAC-IF01AHC AHC M-Net Adapter
- AL2-14MR-D α2 Simple Application Controller

## Accessories

- AL2-2DA Analog Output Expansion Module

## Required Field Supplied Parts

- 24 VDC Power Supply
- 17-32 VDC M-NET Communication Power (PAC-SC51KUA M-Net power supply provided with EB-50GU-A Standard Package)
- Sensors and Relays depending on application
- Nema rated enclosure
- Wiring

## Compatible Controllers

- EB-50GU-A Centralized Controller
- PAR-U01MEDU-J Remote Controller

## Software Required

- Maintenance Tool Software Version 5.08 or later (Required for initial settings)
- Alpha 2 custom application programmed by MEUS Controls Engineer
  - Sequence of Operation shall be specified by the end user and programmed by MEUS Controls Engineer (Programming fees may apply).

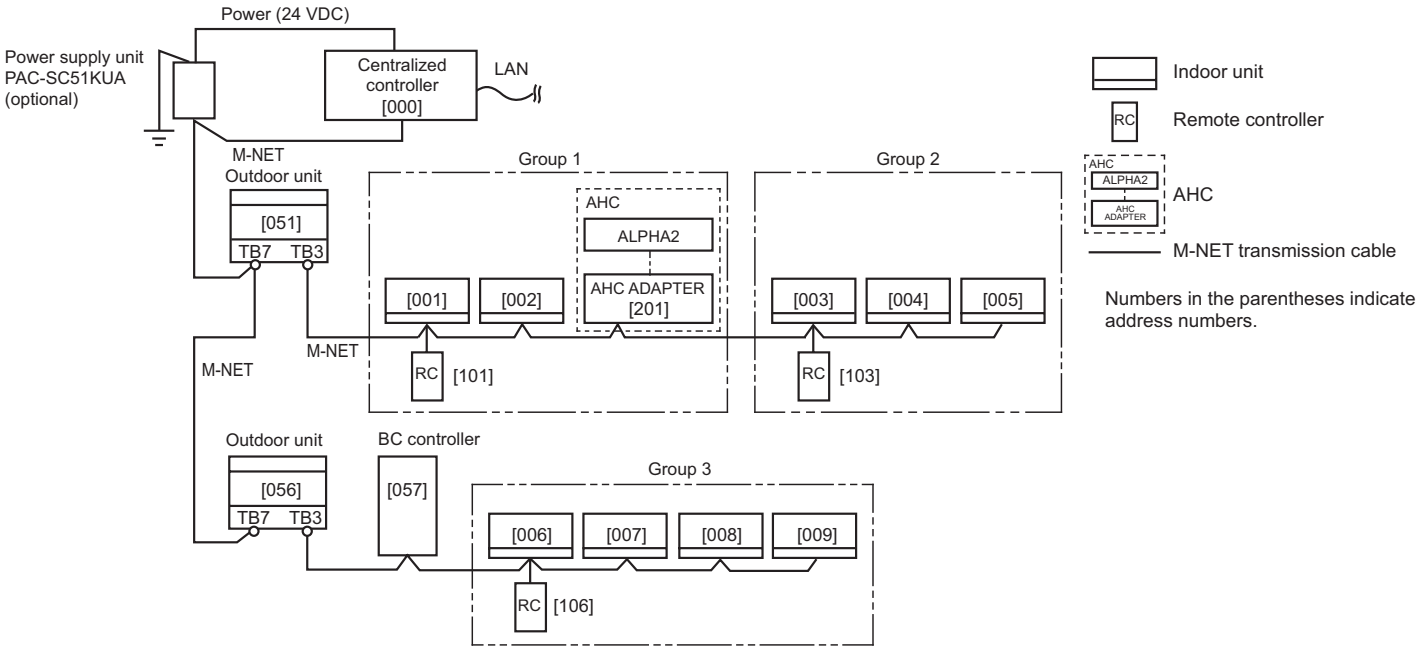
## ADVANCED HVAC CONTROLLER (DC-A2IO) SPECIFICATIONS

- Hardware:
  - 8 Digital or Analog Inputs (Sensor data collected in real-time)
  - 6 Digital Outputs
  - 2 Analog Outputs (Requires AL2-2DA)
- Monitoring and Control:
  - *Up to two groups (16 max indoor units/group)
    Note: * EB-50GU Central Controller or PAR-U01MEDU Smart ME Remote Controller
  - Analog/digital inputs/outputs (M-Net sensor data collected every 70 seconds)
  - Error status up to 50 indoor units
- Application examples include Interlocking indoor units with third party equipments:
  - Heaters
  - Humidifiers
  - Dehumidifiers
  - Fans
  - Ventilators
  - Valves
  - Pumps
  - Dampers
  - Supply water or air temperature reset
  - Windows and door switches
  - Leak detection
  - Gas monitoring, alarming, and occupancy control.

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# Model: DC-A2IO Advanced HVAC Controller Package - System Configuration

The figure below only shows the transmission cable connections. Power cables are omitted.




*AHC ADAPTER requires either an outdoor unit or a power supply device as a power source for M-Net communication. In addition, the α2 requires a field supplied 24 VDC power supply

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# Model: DC-A2IO Advanced HVAC Controller Package - Specifications

## PAC-IF01AHC AHC M-Net Adapter

| Item | | | Specifications |
|---|---|---|---|
| **Power Supply** | M-Net | | 17–32 VDC |
| | α2 | | 24 VDC |
| **Interface** | M-Net transmission terminal | | |
| | Serial Interface | | Exclusively for connection to α2 |
| **Ambient conditions** | M-Net | Operating temperature range | -10° C – +55° C [+14° F – +131° F] |
| | Temperature | Storage temperature range | -20° C – +60° C [-4° F – +140° F] |
| | Humidity | | 30%–90% RH (Non-condensing) |
| **Dimensions (W x H x D)** | | | 116 × 90 × 40 mm [4.57 × 3.54 × 1.57/ in] |
| **Weight** | | | 0.4 kg [1lb] |
| **Installation conditions** | | | Mounted indoors using a NEMA1 rated metal enclosure or better.<br>* To be used in a business office or similar environment |

## AL2-14MR-D α2 Simple Application Controller

| Item | | | Power Supply Specifications | |
|---|---|---|---|---|
| **Power Supply** | | | 24 VDC, +20% -15% | |
| **Maximum Momentary Power Failure** | | | 5ms | |
| **In-rush Current** | | | ≤7.0A | |
| **Maximum Power Consumption** | | | 7.5 W | |
| **Typical Power Consumption (without Special Connection Modules)** | | | I/O all On - 4.0 W; I/O all Off - 1.0 W | |
| | | | **DC Input Specification** | |
| | | | **Sink ("-" Common)** | **Source ("+" Common)** |
| **Input Current** | **Main Unit** | **I01 - I08** | 5.5mA, 24V DC | 6.0mA, 24 VDC |
| | | **I09 - I15** | | 5.5mA, 24 VDC |
| **OFF→ON / ON→OFF** | **Main Unit** | **I01 - I15** | Current: ≥ 4.7mA / ≤ 1.1 mA<br>Voltage: ≤ 4V / ≥ 18V | Voltage: ≥ 18V / ≤ 4V |
| **Isolation Circuit** | **Main Unit** | | None | |
| | | | **Analog Input Specifications** | |
| **Number of Input Points** | | | 8 (I01 - I08) : AL2 - 14MR - D | |
| **Analog Input Range** | | | 0 - 500 | |
| **Resolution** | | | 9 bit, 20mV (10V/ 500) | |
| **Conversion Speed** | | | 8ms | |
| **Input Voltage** | | | 0 -10 VDC | |
| **Input Impedance** | | | 142kΩ | |
| **Overall Accuracy** | | | ± 5% (0.5 VDC) | |
| **Offset/Gain** | | | Offset Value = 0 at 0 VDC<br>Gain Value: 0 - 10V = 0 - 500<br>These default values can be changed in the Offset/Gain FB | |
| **Temperature Drift** | | | ± 3 LSB | |
| | | | **Relay Output Specifications** | |
| **Maximum Resistive Load** | | | 8A/COM | |
| **Contact Life Cycle / Resistance Load** | | | 100,000 Cycles at 8 A | |
| **Minimum Load** | | | 50mW (10mA at 5 VDC) | |
| **Maximum Inductive Load** | | | 249 VA (1/3 hp) | |
| **Response Time** | | | ≤ 10 ms | |
| **Operation Indication** | | | Liquid Crystal Display | |
| **Isolation Circuit** | | | By Relay | |
| | | | **Environmental and Electrical General Specifications** | |
| **Programming Method** | | | Function Block | |
| **Program Capacity** | | | 200 Function Blocks or 5000 bytes | |
| **Device Backup** | | | 20 Days at 25° C / 77° F (by capacitor) | |
| **Operating Temperature** | | | Controller Hardware: (-25) - 55° C / (-13) -131° F<br>Controller Display: (-10) -55° C / 14 - 131° F | |
| **Humidity** | | | 35 - 85% Relative Humidity, no condensation | |

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# Accessories: AL2-2DA Analog Output Expansion Module - Specifications

## AL2-2DA Analog Output Expansion Module

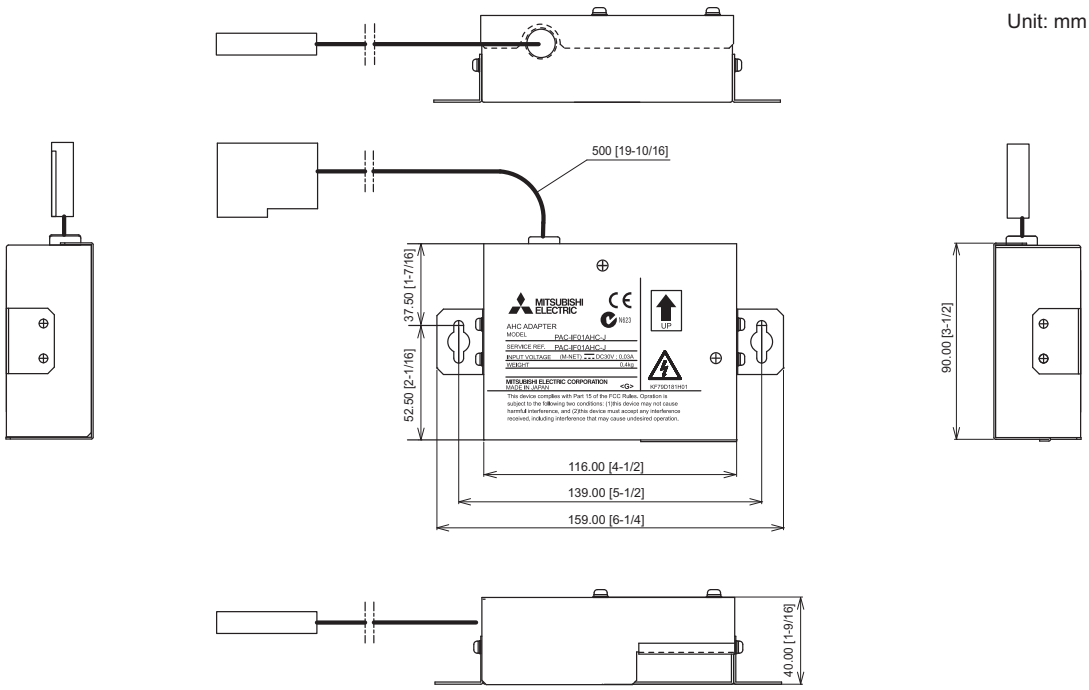
| Item | Power Specifications | |
|---|---|---|
| **Integrated Power Supply** | Supply from the α2 Main Unit | |
| **External Supply for Analog output** | 24 VDC | |
| **External Supply for current consumption** | 70 mA | |
| | **Hardware Specification** | |
| | **Voltage** | **Current** |
| **Analog Output Range** | 0 - 10 VDC<br>(External load resistance 5k - 1M) | 4 - 20 mA<br>(External load resistence less than 500→ ) |
| **Digital Input** | 0 to 4000 | 0 to 2000 |
| **Resolution** | 2.5mV (10V / 4000) | 8μA ([20-4]mA / 2000) |

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# Model: DC-A2IO Advanced HVAC Controller Package - Dimensions

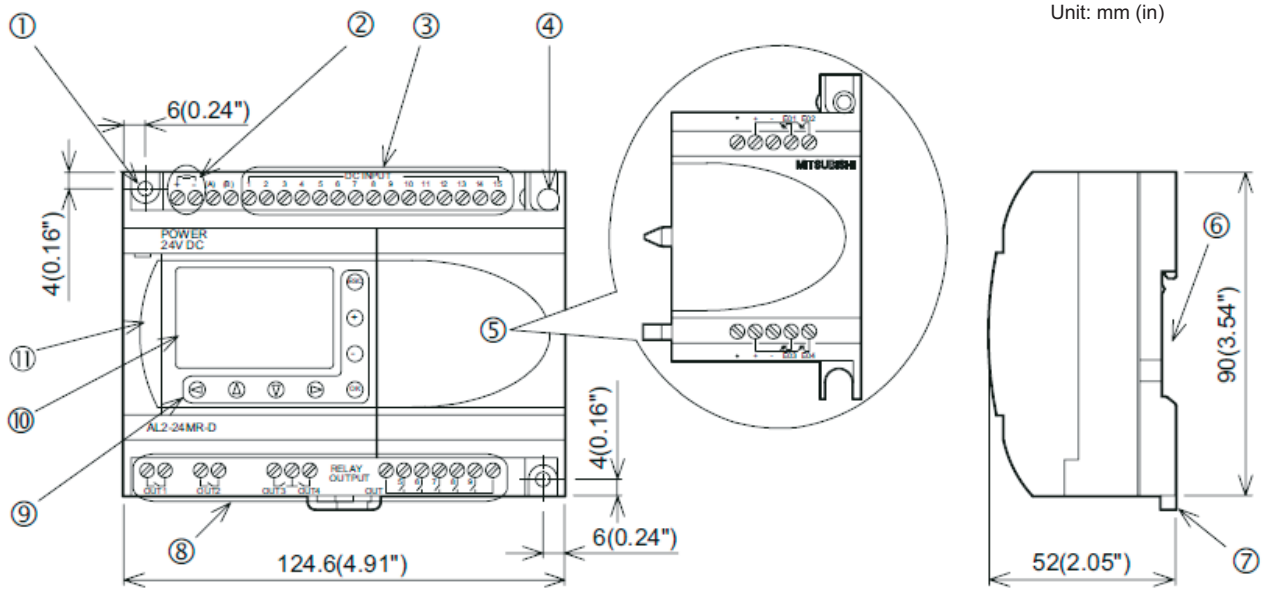
## PAC-IF01AHC AHC M-Net Adapter

Unit: mm (in)




## AL2-14MR-D α2 Simple Application Controller

Unit: mm (in)



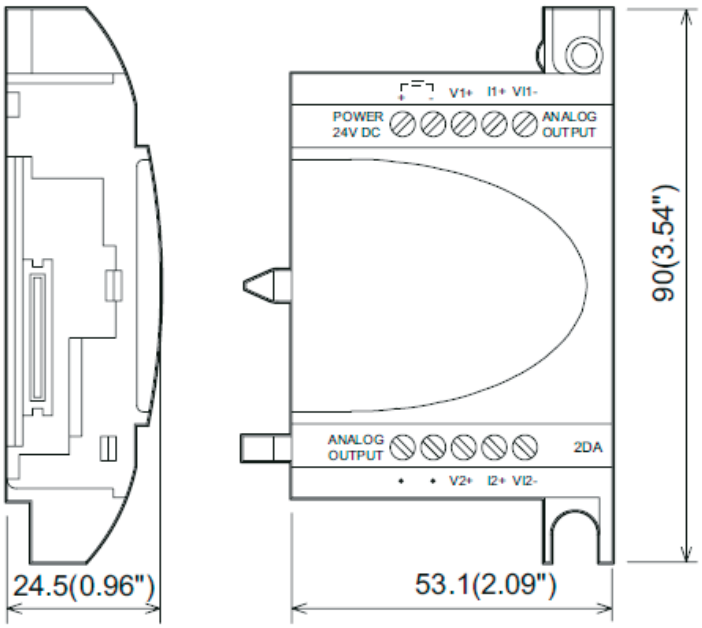

| Ref | Item Description |
|---|---|
| 1 | Mounting hole, ∅4.2mm |
| 2 | Power Terminals |
| 3 | Input Terminals |
| 4 | Mounting screw for the extension cover or extension module |
| 5 | Extension cover or extension module |
| 6 | Groove for DIN rail mounting (Width of DIN rail 35mm <DIN EN 5002>) |
| 7 | DIN-RAIL mounting clips |
| 8 | Output terminals |
| 9 | Operation keys |
| 10 | Liquid crystal display |
| 11 | Programming port cover |

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# Accessories: AL2-2DA Analog Output Expansion Module - Dimensions

## AL2-2DA Analog Output Expansion Module

Unit: mm (in)




Notes:

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FORM# DC-A2IO Advanced HVAC Controller - 201305
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