Models:
M2K01 v1:   1 Speed Fan, 2 Cool & 2 Heat Controller, 7 Day / 4 Event Time Clock

**M2K01 v1
Micro2000 Controller**

ℹ This Datasheet is for use with M2K01 Controllers with Version 1 options loaded. For M2K01 Version 2 Controllers without these options use Datasheet DS 9.01.

ℹ The Clock is not battery backed. Time and Day will need to be set every time power is cycled. However, Schedules and Parameters are permanently saved.

Specifications

Power Supply
Voltage: 240VAC ±10% @ 50/60Hz
Power Consumption: 7VA max

Inputs
• 10k ohm thermistor temperature sensor for room temp (5°C to 35°C Range)
• Switched contact for External After Hours Switch

Outputs
Relay # 1,2,3:   Voltage free relay contacts:
Normally Open   16A resistive.
                          6A inductive.
Relay # 4 & 5:   Voltage free relay contacts:
Normally Open   2A resistive.
                          0.5A inductive.

Connection Between Controller And
Control Station
• 4 way connection via 3 core plus screen cable

Control Station Terminal Identification
TEMP   Temperature Sensor input.
AHrs   External After Hours switch input.
GND   For Common of Temperature Sensor & Cable Shield.
+12V   Power from Controller.
Comms   Comms to Controller.
GND   Ground from Controller

Controller Terminal Identification
240 Volt Power connection to Control Unit:
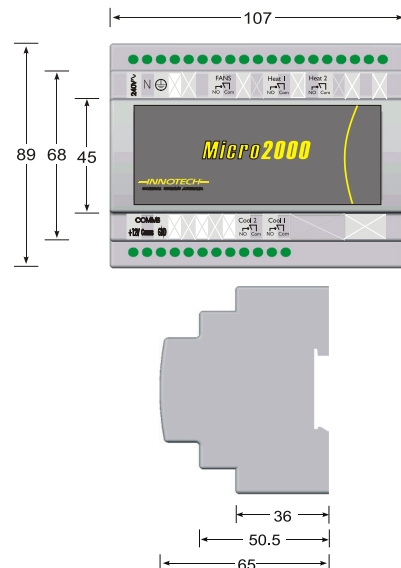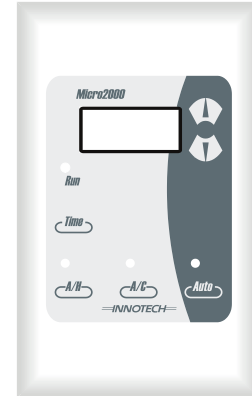E   Earth.
N   Neutral supply.
240V~   Mains 240VAC Supply.

Output Relays
NO   Normally open contact.
COM   Common contact.
+12V   Power to Control Station.
Comms   Comms from Control Station.
GND   Ground to Control Station.

Temperature Ratings
• Storage   0 to 50°C non-condensing
• Operating   0 to 40°C non-condensing

Application
The Innotech Micro2000 Series Controllers are designed to be used in commercial applications to provide complete control for air conditioning systems.

Features
• LED Display of Temperature and Program functions
• Control Station fits standard electrical wall plates
• Four core screened cable simplifies connection between the control station and controller
• Adjustable Proportional Band, Dead Zone, Compressor Restart Time, After hours Timer and Setpoint Range
• Able to operate as 2 cool, 2 electric heating or as reverse cycle heating or cooling
• After Hours function
• 7 Day 24hr Real Time Clock
• Programmable Schedules, 4 Events per day
• Storage of Accumulated After Hours Run Time
• All adjustments from the Control Station

Approved
The Innotech Micro2000 series controllers conforms to the requirements per European Consortium Standards EN55011:1998 (Emissions), Class B, Group 1 for the requirements of the Australian/New Zealand standard AS/NZS 2064 1/2:1997 Class B Group 1 for purposes of C-Tick certification.

Installation

1. The Micro2000 should be mounted on DIN rail in cabinets approved for switchgear or industrial control equipment. It should be mounted in a dry and clean location, free of excess vibration. Maximum terminal cable entry is 1.5mm² wire.
2. Wire in accordance with INNOTECH connection diagrams and local bylaws or refer to your local distributor.
3. Connect the 240VAC supply to the correct terminals on the controller, observing the correct polarity of the connections. Connect the EARTH to the correct terminals on all units.
4. The maximum wire length between the control station and the controller should not exceed 50 metres. The wiring between these devices should not be run in parallel with conductors carrying high current.

⚠️ This product should only be installed by qualified personnel.

Inputs And Outputs

Analogue Inputs – Temperature Detectors
- AI #1 for Room Temperature – Thermistor (SENx) Digital Inputs – Switches
- DI #1– External After Hours Switch. (Momentary Push Button)

Digital Outputs – Items to be controlled
- DO #1 – Fan (16A Relay. Common and Normally Open Contact)
- DO #2 – Heat 1 (16A Relay. Common and Normally Open Contact)
- DO #3 – Heat 2 (16A Relay. Common and Normally Open Contact)
- DO #4 – Cool 2 (2A Relay. Common and Normally Open Contact)
- DO #5 – Cool 1 (2A Relay. Common and Normally Open Contact)

Fault Representation

1. If the Control Station display reads HELP, this is due to a communications error between the Controller and the Control Station. Check the interconnecting 4 core screened cable for continuity or short circuits. (RESULT FROM FAILURE: The controller will shut down)
2. If the Control Station reads SEN FAIL, this is due to an open circuit room Temperature Detector. To test the detector, disconnect it from the room and connect it directly to the controller.

Programming Your Controller

1. To enter into the programming mode, press and hold the "Time" button and then the "UP" arrow for 5 seconds. When the screen becomes blank, release the buttons.
2. When you have entered the programming mode, "P 00" will be displayed. (P=Parameter, 00=Parameter 0)
3. In the programming mode, the "Up" and "Down" buttons select which Parameter is to be edited. (From Parameter 00 to 10)
4. When you have selected the correct Parameter, Press the "Time" button. The value of that Parameter may then be altered by pressing the "Up" or "Down" buttons. When you have adjusted that Parameter to the desired setting, press the "Time" button to confirm the changes.
5. After Step 4, you will be back at the Parameter selection stage once again. Repeat steps 3 & 4, until you have adjusted all Parameters you require.
6. To EXIT the programming mode and SAVE your new settings, press and hold the "TIME" for 5 seconds. When the screen becomes blank, release the button.

Important Notes For Programming

1. If you do not save your alterations, by holding the "Time" button for 5 seconds, the controller will revert to the last saved settings.
2. If you are in the process of adjusting a Parameter (Using the "Up" and "Down" buttons), and do not press any buttons for 30 seconds, the controller will revert back to the Parameter selection screen. (Eg. P 00)
3. If the Parameter selection screen (Eg. P 00) is left unaltered for 60 seconds, the controller will revert to the last saved setting, and exit. The temperature will be displayed.

Parameters

Parameter 0: Sensor Calibration
The display will show the sensor temperature. To offset the sensor temperature adjust using the up and down buttons.
The range of offset is ± 10°C.
The factory default setting is 0.0°C.

Parameter 1: Minimum Setpoint
The display will show the Mimimum Setpoint to which the controller can be set.
The range of Minimum Setpoint is 0 to 50°C.
The factory default setting is 15°C.

Parameter 2: Maximum Setpoint
The display will show the Maximum Setpoint to which the controller can be set.
The range of Maximum Setpoint is 0 to 50°C.
The factory default setting is 30°C.

Parameter 3: Dead Band
The display will show the Dead Band setting.
The range of the Dead Band is 0 to 9.9°C.
The factory default setting is 0.5°C.

Parameter 4: Proportional Band
The display will show the Proportional Band Setting. A Proportional Band setting of 2°C will result in a differential of 2°C for heating and 2°C for cooling.
The range of Proportional Band is 0 to 9.9°C.
The factory default setting is 1.0°C.

Parameter 5: After Hours Timer
The display will show the After Hours Time. This is the period the unit will run for if an after hours pulse is received.
The range of the After Hours Time is 0 to 24 hours.
The factory default setting is 2 hours.

Parameter 6: Fan Run On Time
The display will show the Fan Run On Time. This is the period the fan will run for if it is operating in heating and the controller is turned off. This is to remove any residual heat where electric heating is used.
The range of the Run On Time is 0 to 99 seconds.
The factory default setting is 30 seconds

Parameter 7: Compressor Minimum Off Time
The display will show the Compressor Minimum Off Time. This is the period the compressor must remain off before it can restart.
The range of the Off Time is 0 to 99 minutes.
The factory default setting is 4 minutes.

Parameter 8: Rev/Edh
The display will show either REV or EDH to select which mode the controller will operate Electric Heat mode (EDH) the heat and cool relays operate independently of each other. Reverse Cycle mode (REV) cool relay controls the compressor in both cooling and heating operations. The heat relay operates the reversing valve.
The factory default setting is EDH.

Parameter 9: Hea/Cool
The Display will show either HEA or COOL to select if the reversing valve is energised for cooling or energised for heating.
COOL: the heat relay will close during cooling.
HEA: closed the heat relay will close during heating.

ℹ️ This parameter is only effective if Parameter 8 is set for Reverse Cycle Operation.
The factory default setting is HEA.

Parameter 10: Fan Cycle
The Display will show either On or Off to select continuous fan operation or fan cycles with heating.
On: Fan Cycles with Heating
Off: Fan runs Continuously.
The factory default setting is Off.

Parameter 11: Setpoint Display Only
The display will show either On or Off to display the setpoint only
On: The setpoint is displayed.
Off: The current temperature is displayed.
The factory default setting is Off.

Programing Schedule / Clock
Pushbuttons Function

Time	ENTER
A/H	BACKSPACE
A/C	DELETE
Auto	COPY

1. To ENTER the CLOCK / SCHEDULE programming mode, press and hold the "TIME" Button for 5 seconds. When the screen becomes blank, stop holding down the button.
2. When you have entered the programming mode, "CLO" will be displayed. Use the Up and Down buttons to select either CLO or SCH (CLO - Clock, SCH - Schedules).

   To Select press the Time button.

   ℹ️ To exit out of programming mode at any time Press and hold the "Time" Button for 5 sec then release.

3. If CLO was selected the Current Time will be displayed. Use the "Up" and "Down" arrows to set the time and Day. The Time Button can be used to toggle between the Time and Day. (Day 1-7, Mon-Sun).
   The Back Button can be used to go back to Step 2 or exit as noted in step 2.
4. If SCH was selected in step 2 you can now set/edit the schedules The display will show "Day1". Use the "Up" and "Down" arrows to select which Day you wish to view. Press the "Time" button to select or "Back" button to go back to Step 2.
5. After you have selected the day the display will show "SCH1". Use the "Up" and "Down" arrows to select which schedule you wish to view. Press the "Time" button to select or "Back" button to go back to Step 2.
6. You can now set the On and Off times for that Day and Schedule Use the "Up" and "Down" arrows to set the time. Press the "Time" button to accept or the "Back" button to go back.
7. A Schedule can be deleted by pressing the "Del" button when viewing the On time for the particular schedule you wish to delete.
8. A copy function is available to copy a previous days schedule. Either Sch1 or Sch2. This can be done by pressing the "Copy" button while viewing the On time for the Schedule you wish to set.

Push Buttons
When not in a programming mode the buttons are used for the following:

Auto This is used to turn the controller off, to allow it to operate in auto mode. When Auto mode is set the Controller will turn on if a Schedule is current or the After hours buttons is pressed.

A/H By pressing this the Controller will run for the Time set in Parameter 5.

A/C This button can be used to select either Vent mode (Fan only runs) or Condition Mode (Full control).

Time By pressing this button the Current Time will be displayed.

🔽🔼 These buttons can be use to change the current setpoint.

After Hours Run Time
To view the accumulative After Hours Run Time, press and hold the "A/H" and "Time" pushbuttons for 5 seconds. The displayed value is the total after hours run time up to the previous hour. A total of 9999 hours may be accumulated.

To reset the After Hours Run Timer, simply press and hold the "Up" and "Down" pushbuttons until the display reverts to 00.
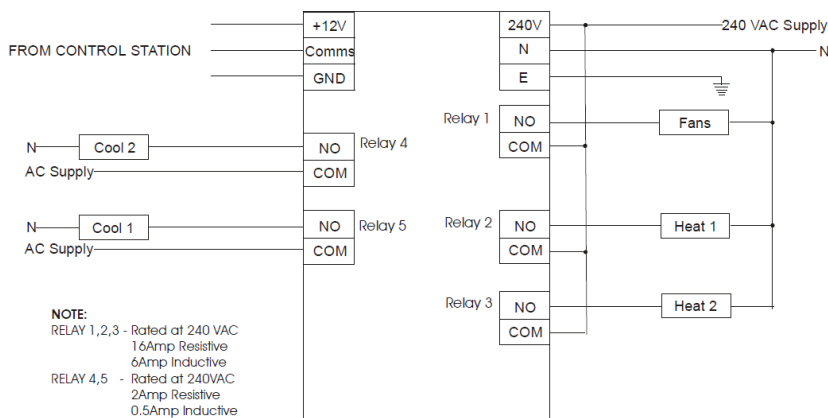
To exit the After Hours Mode, press and hold the "Time" pushbutton for 5 seconds again. The display will revert back to the current temperature.
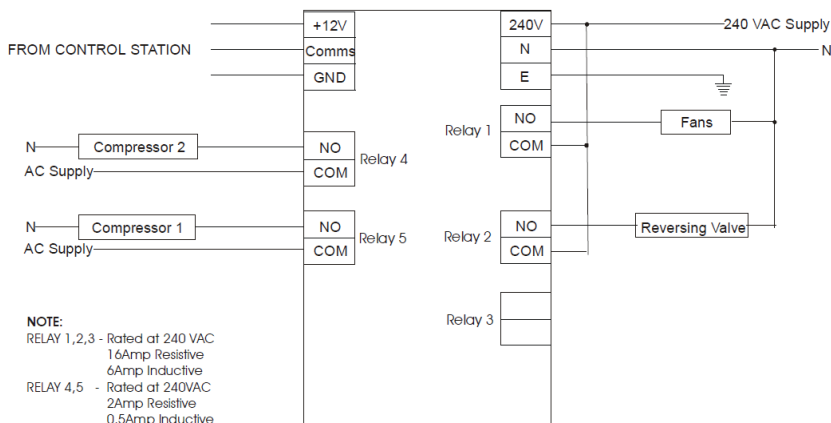
STANDARD CONNECTION
CONTROL STATION

Rear View of Control Station

10Kohm Thermistor

| TEMP |
| Ahrs |
| GND |

A/Hrs Input

Voltage Free Contact

| GND |
| Comms |
| +12V |

TO CONTROLLER

ELECTRIC HEAT CONNECTION
CONTROLLER

FROM CONTROL STATION

| +12V |
| Comms |
| GND |

240V	240 VAC Supply
N	N
E	

Relay 1
| NO | Fans |
| COM | |

N — Cool 2
AC Supply

| NO | Relay 4 |
| COM | |

Relay 2
| NO | Heat 1 |
| COM | |

N — Cool 1
AC Supply

| NO | Relay 5 |
| COM | |

Relay 3
| NO | Heat 2 |
| COM | |

NOTE:
RELAY 1,2,3 - Rated at 240 VAC
16Amp Resistive
6Amp Inductive
RELAY 4,5 - Rated at 240VAC
2Amp Resistive
0.5Amp Inductive

REVERSE CYCLE CONNECTION
CONTROLLER

FROM CONTROL STATION

| +12V |
| Comms |
| GND |

240V	240 VAC Supply
N	N
E	

Relay 1
| NO | Fans |
| COM | |

N — Compressor 2
AC Supply

| NO | Relay 4 |
| COM | |

Relay 2
| NO | Reversing Valve |
| COM | |

N — Compressor 1
AC Supply

| NO | Relay 5 |
| COM | |

Relay 3

NOTE:
RELAY 1,2,3 - Rated at 240 VAC
16Amp Resistive
6Amp Inductive
RELAY 4,5 - Rated at 240VAC
2Amp Resistive
0.5Amp Inductive

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