INNOTECH®

DS 9.13
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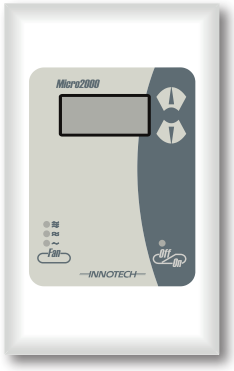
Models:
M2K13: 3 Speed FAN, 1 COOL and 1 HEAT Controller for Hotel Room Applications

M2K13
Micro2000 Controller



Specifications

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

Inputs
- 10kΩ Thermistor temperature sensor
- Digital Input for Key Switch
- Digital Input for Balcony Door

Outputs

Relay # 1:	Voltage free relay contacts:	
	Normally Open	16A resistive
		6A inductive
Relay # 2, 3, 4:	Voltage free relay contacts:	
	Normally Open	10A resistive
		6A inductive
Relay # 5, 6:	Voltage free relay contacts:	
	Normally Open	2A resistive
		0.5A inductive

Connection Between Controller and Control Station
- 3 way connection via 2 core plus screen cable

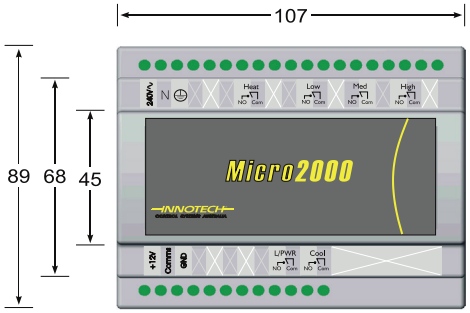
Control Station Terminal Identification
- IN 1 Temperature Sensor Input
- IN 2 Digital Input for Key Switch
- IN 3 Digital Input for Balcony Door
- +12V Power from Controller
- Comms Comms to Controller
- GND Ground from Controller

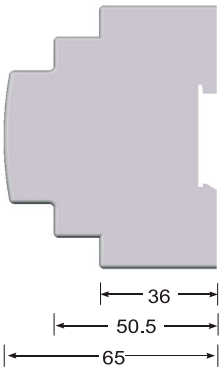
Controller Terminal Identification
240 Volt Power connection to Control Unit:
- ⏚ Earth
- N Neutral supply
- 240V~ Mains 240VAC Supply

Output Relays
- NO Normally open contact
- COM Common contact

Comms Terminals
- +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
- Sensor Input: 5 to 35°C





Application
The Innotech M2K13 Controller is designed to provide complete control of air conditioning systems for commercial applications. The unit can be configured for air cooled or water cooled condenser applications where a condenser water pump interlock system is required.

Features
- LED Display of Temperature and Program functions
- Control Station fits standard electrical wall plates
- Two core screened cable simplifies connection between the control station and controller
- Adjustable Proportional Band, Dead Zone, Compressor Restart Time and Setpoint Range
- Able to operate as 1 cool, 1 electric heating
- Balcony Door Input
- Key Switch Input
- Delay to OFF for lights and power for safe egress
- All adjustments from the control station

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Approvals

The *Micro2000* series controllers conform to:

- Electromagnetic emission and immunity requirements according to standards EN55011 (CISPR11) and EN50082 for CE Marking and C-Tick Labelling.

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 1.5mm^2 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.

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 screened cable for continuity or short circuits. As a result of this failure, the controller will shutdown.
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.

Inputs

1. INPUT 1 Temperature Sensor Input: (Range 5 - 35°C.) This input is used to read the current temperature.
2. INPUT 2 - Key Switch Input
3. INPUT 3 - Balcony Door Input

Outputs

Relay #1	Heat (16A Relay. Common and Normally Open Contact)
Relay #2	Fan Low (10A Relay. Common and Normally Open Contact)
Relay #3	Fan Mid (10A Relay. Common and Normally Open Contact)
Relay #4	Fan High (10A Relay. Common and Normally Open Contact)
Relay #5	Cool (2A Relay. Common and Normally Open Contact)
Relay #6	R1 Light and Power

Push Buttons

The normal control button use is described below:

1. Fan The "Fan" button is used to change the current fan speed. The fan speed is indicated by 3 LEDs above the button. If the controller is not running (Off), the Fan button can be used to turn the Fan on only (Vent Mode)
2. Off On This button is used to turn the controller on and off.

To view the room temperature, hold the ▲ and ▼ buttons for 5 seconds. The actual room temperature will be displayed for 10 seconds before reverting back to displaying the Setpoint temperature.

Programming Your Controller

To enter into the programming mode, press and hold the Off On button and the ▲ arrow for 5 seconds. When the screen becomes blank, release the buttons.

- When you have entered the programming mode, "P 00" will be displayed (P=Parameter, 00=Parameter 0).
- In the programming mode, the ▲ and ▼ buttons select which Parameter is to be edited. (From Parameter 00 to 18).
- When you have selected the correct Parameter, press the Off On button. The value of that Parameter may then be altered by pressing the ▲ or ▼ buttons. When you have adjusted the Parameter to the desired setting, press the Off On button to confirm the changes.
- After confirming the changes (above), you will be back at the Parameter selection stage once again. Select and change parameters until have adjusted all Parameters you require.
- To EXIT the programming mode and SAVE your new settings, press and hold the Off On button for 5 seconds. When the screen becomes blank, release the button.

Important Notes For Programming

- If you do not save your alterations, by holding the Off On button for 5 seconds, the controller will revert to the last saved settings.
- If you are in the process of adjusting a Parameter (Using the ▲ and ▼ buttons), and do not press any buttons for 30 seconds, the controller will revert back to the Parameter selection screen. (Eg. P 00)
- 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 programming mode.
- To access the programming menu, Inputs 2 & 3 of the wall plate Control Station must have their switches closed. If either the Balcony Door Switch or Key Switch is open, the wall plate will remain in Standby Mode.

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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 Minimum Setpoint to which the controller can be set.
- The range of Minimum Setpoint is 5 to 35°C
- The factory default setting is 20°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 5 to 35°C
- The factory default setting is 24°C

Parameter 3: Dead Band (Normal Mode)
The display will show the Dead Band setting.
- The range of the Dead Band is 0°C to 9.9°C
- The factory default setting is 1.0°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 0.5°C to 9.9°C
- The factory default setting is 1.0°C

Parameter 5: 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 00 minutes

Parameter 6: Fan Run On Time
The display will show the Fan Run On Time.
- The range of the Run On Time is 0 to 99 seconds
- The factory default setting is 2 minutes

Parameter 7: EDH / REV
The display will show either EDH or REV 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): the 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 8: 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: the heat relay will close during heating
- The factory default setting is HEA

This parameter is only effective if Parameter 7 is set for Reverse Cycle Operation.

Parameter 9: 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 10: Setpoint Display Only
The display will show either On or Off. This is used to display the Setpoint only.
- On: The setpoint is displayed
- Off: The current temperature is displayed
- The factory default setting is Off

Parameter 11: Default Fan Speed
This is used to set the speed the fan will run in Standby Mode.
- Off / Low / Med / High
- The factory default setting is Low

Parameter 12: On / Off
This is used to set the state when returning to Normal Mode.
- Off / On
- The factory default setting is On

Parameter 13: Setpoint in Standby Mode
The display will show the set point in Standby Mode.
- The range of the Setpoint is 15.0°C to 35.0°
- The factory default setting is 22°C

Parameter 14: Deadband When in Standby Mode
The display will show the Deadband in Standby Mode.
- The range of the Deadband is 0.0°C To 9.9°C
- The factory default setting is 3.0°C

Parameter 15: Standby Fan Cycle Time
The display will show the Fan Cycle Time in Standby Mode.
- The range of the Fan Cycle Time in Standby Mode is 0 to 99 minutes
- The factory default setting is 40 minutes

Parameter 16: Standby Fan On Time
The display will show the Fan On Time in Standby Mode.
- The range of the Fan On Time in Standby Mode is 0 to 99 minutes
- The factory default setting is 10 minutes

Parameter 17: Key Switch Removed
The display will show the delay time to power down once the Key Switch is removed.
- The range of the delay time to power down is 0-15 seconds
- The factory default setting is 10 seconds

Parameter 18: Balcony Door Open Delay
The display will show the delay time to power down after the Balcony Door is opened.
- The range of the delay time to power down once the Balcony Door is opened is 0 to 99 seconds
- The factory default setting is 30 seconds

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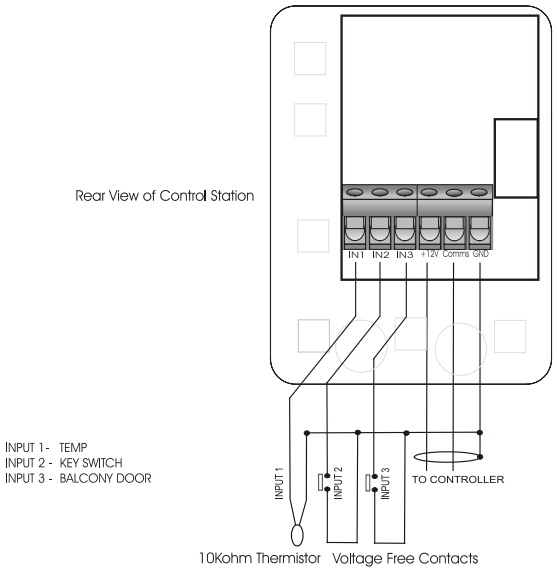
CAUTION **The following describes potentially hazardous situations which, if not avoided, could result in death, serious or minor injury, or property damage.**

1. Never touch the I/O terminals while power is being supplied.
2. Never attempt to disassemble the unit while power is being supplied.
3. Emergency stop circuits, limit circuits, interlock circuits and similar safety measures must be provided.
4. The Micro2000 outputs may remain On or Off due to burning or deposition of the output relays. External safety measures must be provided for such problems to ensure safety in the system.
5. Follow Innotech wiring diagrams and the installation / wiring instructions contained in this Datasheet.

STANDARD CONNECTION

CONTROL STATION



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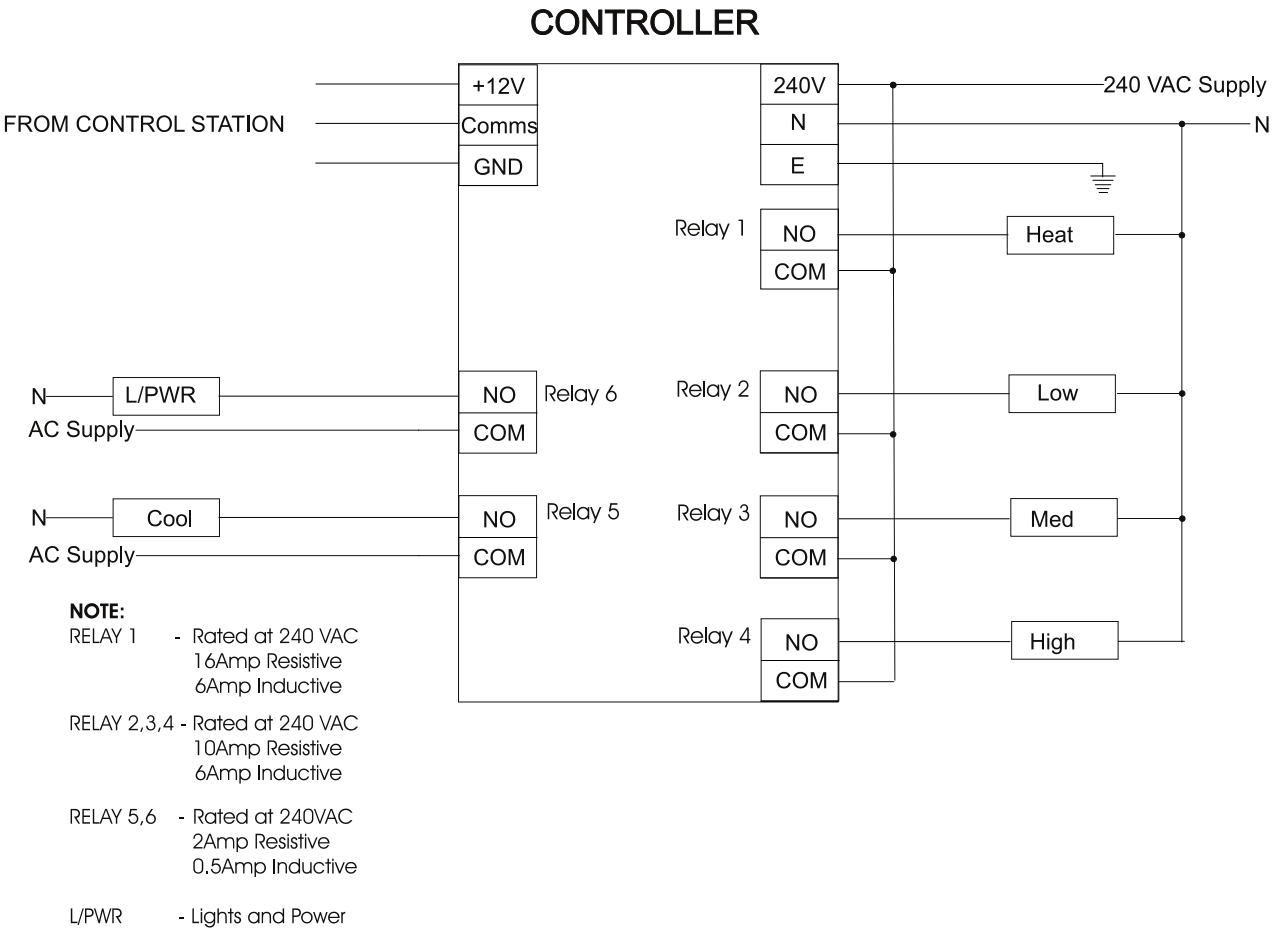
ELECTRIC HEAT CONNECTION



NOTE:

RELAY 1 - Rated at 240 VAC
16Amp Resistive
6Amp Inductive

RELAY 2,3,4 - Rated at 240 VAC
10Amp Resistive
6Amp Inductive

RELAY 5,6 - Rated at 240VAC
2Amp Resistive
0.5Amp Inductive

L/PWR - Lights and Power

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