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DS 10.05
May 2009

Model:
UM01: MicroMAX Small Points Contoller

Type: MicroMAX Controller

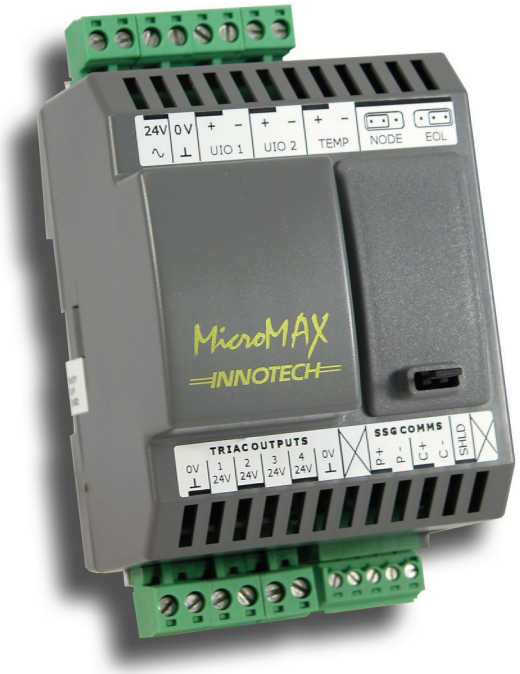
Overview

The Innotech *MicroMAX* Controller is a state of the art digital processing system that has the capability of controlling various types of industrial, commercial and domestic systems. The *MicroMAX* can operate as a standalone device, using its own universal I/O and TRIAC Outputs to receive information and control external equipment, or as part of a network of Innotech devices, either within the Primary Network or a Sub System Network.

The *MicroMAX* Controller features Universal I/O channels (UIO) which combine the functions of Universal Input and Analog Output channels into a single software programmable channel. Each UIO can be independently set via software to have input or output functionality. With this structure, you are free to assign functions as required, instead of choosing a fixed controller to fit the job.

The *MicroMAX* configuration program is created on a computer using a Windows® based design program. This allows the user to configure the internal processes of the *MicroMAX* by using a graphical programming tool. The user places various process blocks and interconnecting lines to design the required control algorithm for the system.

A connector on the bottom right side of the case provides a RS485 communication interface for communicating with other networked devices.



Applications

The Innotech *MicroMAX* Controller is designed for mounting inside a control cubicle and offers programmable channels, enabling it to monitor and control all types of external plant and equipment. Although the *MicroMAX* is flexible, it is primarily designed for the air conditioning and building automation industry.

The small size of the *MicroMAX* also gives it the advantage of being installed in small places without taking up valuable switchboard real-estate.

The *MicroMAX* is similar in operation to the *MAXIM I* or *MAXIM II* Digital Controllers, but provides Universal Input/Output points that are user configurable and completely independent.

The creation of control strategies is made simple by the use of the Innotech *MAXCon* utility. *MAXCon*, with its powerful Graphical User Interface, allows the user to create an entire control strategy in block-diagram form.

Typical applications include:
- Air conditioning and heating systems.
- Lighting control.
- Monitoring device.
- Distributed I/O points controller.
- Cold/Freezer Rooms.

Features

- 100 millisecond cycle/scan time.
- 1 x dedicated thermistor input.
- 2 x independent configurable Universal Inputs/Outputs.
- 4 x 24 V AC TRIAC Outputs.
- 1 x RS485 Serial Communications Port.
- User selectable Baud Rate:
  - a) Innotech Net Comms 57600bps
  - b) Innotech Sub System Gateway Comms 115200bps
- All wire connections by pluggable screw terminals.
- Program resides in non-volatile flash RAM.
- Real-Time Clock (not battery backed).
- Visual indication of Power, Comms and System Activity.

Approvals

The Innotech *MicroMAX* Controller conforms to:
- EN 61326:1998 for CE Marking and C-Tick Labelling.
- Title 47 CFR, Part 15 Class A for FCC Marking.
- UL listed to UL916, File Number E242628

Specifications

Power Supply Requirements

- 24 V AC ± 10% @ 50 / 60 Hz.
- Transformer nominal rating (maximum TRIAC load): 35VA
- Transformer nominal rating (no TRIAC load): 10VA

The operating voltage must meet the requirements of Safety Extra Low Voltage (SELV) to EN60730. The transformer used must be a Class 2 safety transformer in compliance with EN60742 and be designed for 100% duty. It must also be sized and fused in compliance with local safety regulations.

Temperature Ratings

- Storage: -5 to 60°C non-condensing.
- Operating: 0 to 50°C non-condensing.

Enclosure

The *MicroMAX* is housed in a rectangular case suitable for DIN Rail mounting. The housing is moulded from flame retardant plastics recognised by UL as UL 94-V0.

Colour: Grey.
Dimensions (max): 71mm(w) x 115mm(h) x 67mm(d).

Universal Inputs/Outputs

2 UIOs, independently configurable via software to either:

- Dry Digital Input.
- 0 or 10 V Digital Input.
- 10k Thermistor Input.
- 0-10 V DC Analog Input.
- LUX sensor input (Light sensor ORP12 LDR).
- 13Hz PWM (0/10 V) Output.
- 0-10 V Analog DC Output.
- Digital Output (0 V / 10 V).
- Dry Pulse Counter Input
- 0 or 10 V Pulse Counter Input

Analogue Mode

- Input accuracy: ±0.1 V.
- Input Impedance ~75kOhms.
- Input resolution: ~10mV.
- Output accuracy ±0.1 V (R_{Load} > 2kOhms).
- Output resolution: ~40mV.

Digital Mode

- Output current: Max 10mA.
- Output Voltage swing: 0.3 V - 9.5 V @10mA.
- Input Voltage range: 0 V – 10 V.
- Input Impedance (Dry) ~8.8kOhms.
- Switching threshold (Dry): 4.5 V.
- Input Impedance ~75kOhms.
- Switching threshold: 5 V.
- PWM Duty Cycle accuracy is ±5%.

Temperature Mode

- Designed for use with Innotech *SEN* Series Detectors.
- Nominal sensing range -5°C to 60°C.
- Accuracy +/-3.5%FS (R25°C = 10kOhms).

UIO Type	Input Range	Output Range
0-10 V DC Input	0 to 10 V DC	0 to 10 V DC
Dry Digital Input	Open or Closed	OFF or ON
Voltage Digital Input	0 to 10 V DC	OFF or ON
Thermistor Input	659k to 677 ohms	-50 to 100°C
LUX Sensor Input	20kOhm to 400 ohms	0 to 2500 LUX
Dry Pulse Counter Input	Open or Closed 20ms Min. ON Time 20ms Min. OFF Time	0 to 25 pulses per second ±1 pulse accuracy
Voltage Pulse Counter Input	0-10 V Square Wave 20ms Min. ON Time 20ms Min. OFF Time	0 to 25 pulses per second ±1 pulse accuracy
0-10 V DC Output	0 to 100%	0 to 10 V DC
Digital Output	OFF or ON	0 or 10 V DC

Fixed Thermistor Input

- 1 Fixed Thermistor Input
- Designed for use with Innotech *SEN* Series Detectors.
- Nominal sensing range -5°C to 60°C.
- Accuracy +/-3.5%FS (R25°C = 10kOhms).

Note: LUX Sensor Input mode is useful for switching based on ambient light levels, but is not suitable for any operation which requires the accurate measurement or recording of light levels.

TRIAC Outputs

- 4 TRIAC Outputs: switches 24 V AC Power Supply through to Outputs.
- Current rating (per output): min. 20mA / max. 250mA.
- Modes: Modulation or Digital On/Off.

Note: The use of pilot relays is recommended when switching high inductive loads.

LED Indication

Red LED
- Power LED located internally.

Bicolour LED
- RS485 Communication
- Transmit (Red), Receive (Green).

Orange LED
- Used as an aid when addressing/locating devices on the Sub System Network.

Communications

1 x RS485:
- Serial communications channel optimised for fast data transmission with the Sub System Gateway.
- Providing Netcomms only if used without the Sub System Gateway
- Communication to Innotech *CT01* Handheld Commissioning Tool.
- Connectivity is provided through a 5-way pluggable screw terminal connector.

Note: this connector is not compatible with the standard 5-way connector used for Global and Net Comms on other Innotech products.

Installation

The *MicroMAX* should be installed in an environment that does not exceed the maximum operating parameters of the device. It should be mounted in a dry, clean and vibration free environment.

It is important to ensure proper ventilation, especially when the Digital TRIAC Outputs are in use.

RS485 Comms Termination

The *MicroMAX* has communication termination requirements when used within a Sub System Network. Refer to the Innotech Network Cabling Manual DS 99.04 for a description in the use of End of Line Jumpers (EOL).

Note: Incorrect use of End of Line Jumpers can cause unreliable communication or total network failure.

Networks and Addressing

Network

The *MicroMAX* is designed primarily for use with the IG01 Sub System Gateway, but can be used as a part of the standard Innotech Network or standalone. The mode of operation is configured by setting the User Selectable Baud Rate.

In a standard Innotech Network, the *MicroMAX* uses NET 57600 baud rate. Since the controller does not have Global Comms and data logging memory, it does not provide the following features:
- Data Logging
- Global Points
- Alarms
- Real Time Synchronisation

In a Sub System Network, the *MicroMAX* uses 115200 baud rate. The IG01 Sub System Gateway transparently provides, for any *MicroMAX* on its network, the above features that the *MicroMAX* does not support in the standard Innotech Network mode.

Addressing

The *MicroMAX* has different addressing schemes associated with the network that it is configured for. The two addressing schemes are:
- IG01 Sub System Gateway Automatic addressing – the IG01 Sub System Gateway will dynamically assign the address.
- Standard Innotech Network Static addressing – the *MicroMAX* is assigned the address by the same means as any other controller on the standard Innotech Network.

Please note, in IG01 Sub System Gateway Addressing Mode the IG01 Sub System Gateway assigns the *MicroMAX* its address when it joins a Sub System Network or power cycles.

Commissioning Tool

A special handheld Commissioning Tool (CT01) can be used to configure a *MicroMAX* on a Sub System Network. The configuration loaded on the *MicroMAX* determines the parameters associated with the control strategy that can be adjusted with the CT01.

If there is no configuration loaded into the *MicroMAX*, then the *MicroMAX* is not operational; therefore no parameters can be changed or monitored.

The CT01 can be connected directly to the *MicroMAX* or to the Sub System Network using the supplied adapter cable to configure multiple *MicroMAX* controllers. The IG01 Sub System Gateway has to be disconnected from the network when the CT01 is connected to the Sub System Network.

For ease of use the CT01 has a 4 line, 20 character Liquid Crystal Display and Keypad. The Keypad consists of seven push buttons to provide input into the *MicroMAX* of interest. These buttons are “Up”, “Down”, “Left”, “Right”, “Log On”, “Enter” and “Escape”. Using these buttons, the user can gain access to the *MicroMAX* controller’s menu structure shown below.

Default ----Status----Clock----Setup----Commission
- Var Setup
- IO Config
- PID Par

For more detailed instructions, please refer to the documentation supplied with the Commissioning Tool CT01.

Associated Software

MAXCon - Innotech MAXIM Controller Configuration utility. It allows the user to internally configure a *MicroMAX* by a simple point-and-click approach on a Personal Computer (PC) running Windows.

MAXMon - The Innotech MAXIM Monitor is a monitoring and debugging utility designed to help with commissioning and trouble-shooting a *MicroMAX* Controller. It displays the configuration which resides on a *MicroMAX* Controller and allows the user to inspect, trend or modify the value at any of the points in the configuration while the controller is running.

MicroMAX Simulator - The Innotech MicroMAX Simulator utility is a Windows-based software program that simulates a *MicroMAX* Controller. The virtual *MicroMAX* can be powered on, configured and interrogated in the same way as a physical *MicroMAX*. Configurations can be downloaded and checked without requiring any hardware installation.

iComm - A communications server used by application software to communicate with Innotech digital controllers. It supports multiple concurrent applications communicating to multiple device networks and serves as the communications hub of any HMI-integrated device network.

MAXtract - The data log extraction utility for a range of Innotech digital controllers. It allows extraction of all or part of the history log data associated with Maxim Controllers into a specified data format.

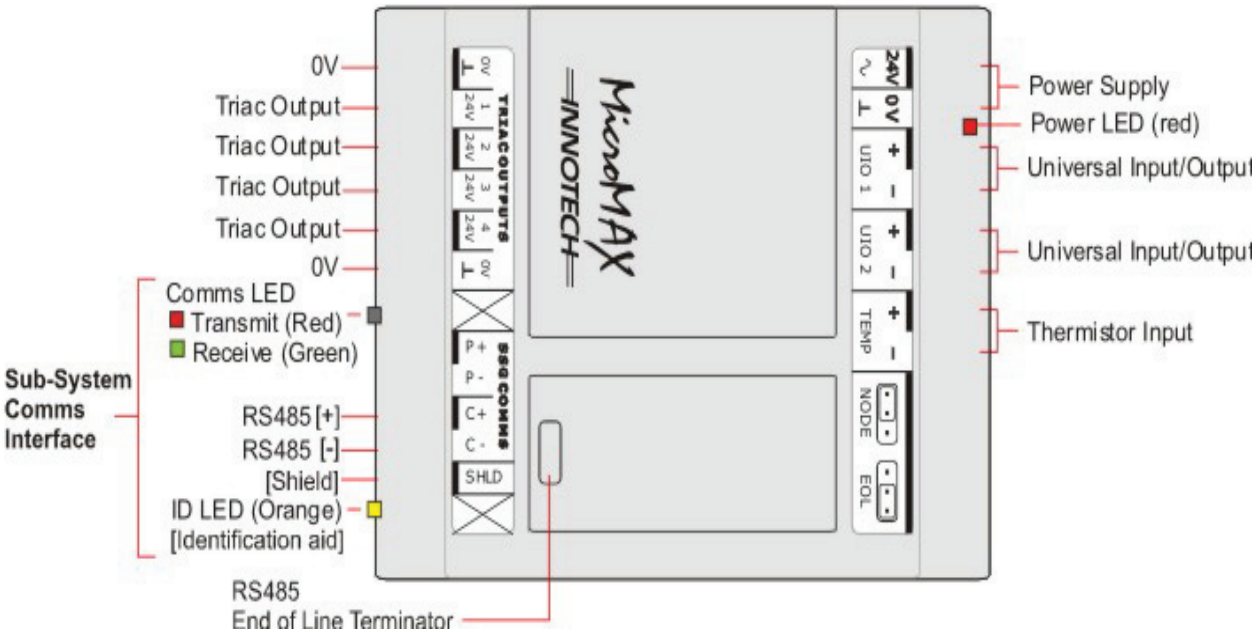
InnoGraph - Innotech's data log graphing and analysis tool. While it has been designed to specifically cater for the data log graphing capabilities of the Innotech range, it has the flexibility to display data log graphing information from other sources. InnoGraph allows multiple graphs to be displayed in multiple windows simultaneously. Complete with a host of configurable display options, statistical analysis of data points, analogue and digital value support, active cursors, colour printing capability and comprehensive zooming and panning features, InnoGraph is your complete graphing package.

Supervisor/Supervisor Plus - A specialised dynamic monitoring utility for the Genesis II and Maxim Series Digital Controllers. It provides all the functionality that is available from the Genesis II and Maxim Series Digital Controller display panels with greater ease-of-use and flexibility. It is aimed at those users who require some feedback or control of the Genesis II and Maxim systems, but have no desire to be immersed in the technical details of a Genesis II and Maxim configurations.

Note: Supervisor Plus allows the user to change the way the watch items are displayed so that the information is presented in a better and more easily understood manner. The user can set background images, arrange the watch items around the page and customise the fonts used.

Magellan - An event-driven, object oriented real-time Supervisory Control and Data Acquisition package. It provides a simple, intuitive mechanism to effortlessly design either trivial or sophisticated supervisory or control programs using a drag-and-drop approach.

Connection Diagram



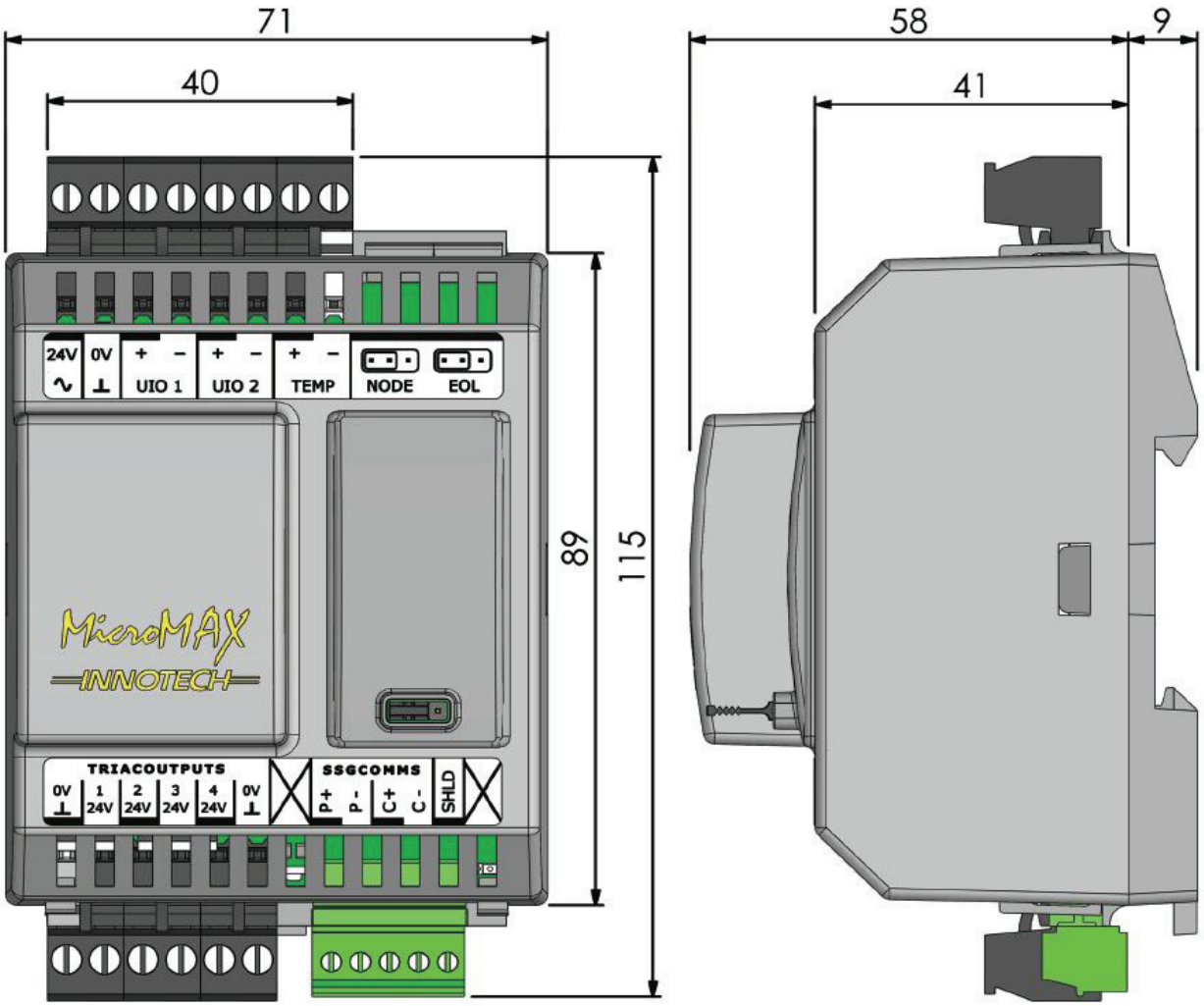
FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications to this device, may void the authority granted to the user by the FCC to operate this equipment.

Dimensional Diagram



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