Models:
MM01C MiniMAX Controller – Primary Network
MM02C MiniMAX Controller – Sub System Network

MiniMAX Controller with innTOUCH Comms

Overview

The Innotech MiniMAX Controller with innTOUCH Comms is a state-of-the-art digital processing system that has the capability of controlling various types of industrial and commercial systems. The MiniMAX 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, where MM01C interfaces with the Primary Network, and MM02C interfaces with the Sub System Network.

The MiniMAX Controller with innTOUCH Comms 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 configured with 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 MM01C/MM02C controllers can be configured using the Windows® based MAXCon software. MAXCon allows the user to configure the internal processes of the MM01C/MM02C controllers by placing various process blocks and interconnecting lines to design the required control algorithm.

Features

- 100 millisecond cycle/scan time
- 7 x independent configurable Universal Inputs/Outputs
- 4 x 24VAC TRIAC Outputs
- 2 x RS485 Communications Ports (Primary Network)
- 1 x RS485 Communications Port (Sub System Network)
- innTOUCH port (Power + Comms) for ISS0x Series HMI
- User selectable Baud Rate
- All wire connections by pluggable screw terminals
- Program resides in non-volatile flash RAM
- Real-time Clock (not battery backed unless used with an ISS02/ ISS04 innTOUCH Smart Sensor with Battery Backup)
- Visual indication of power, comms, and system activity

Applications

Innotech MiniMAX Controllers with innTOUCH Comms are designed for mounting inside a control panel and offer a variety of inputs and outputs to monitor and control all types of external plants and equipment. These controllers are ideal for air conditioning and building automation, but yet flexible and powerful enough to suit a wide range of other applications.

The creation of control strategies is made simple by using the MAXCon software. With it's powerful Graphical User Interface, MAXCon allows the user to create an entire control strategy using block diagrams.

Typical applications include:

- Air conditioning and heating systems
- Lighting control
- Time clock controller
- Monitoring device
- Distributed I/O points controller
- Cold/Freezer Rooms

The MM02C has communication termination requirements. Refer to the Innotech Network Cabling Manual DS 99.04 for using End of Line Jumpers (EOL) when connecting to a network. Incorrect use of End of Line Jumpers can cause unreliable communication or total network failure.

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

Specifications

POWER SUPPLY REQUIREMENTS	
Power input	24VAC ±10% @ 50/60Hz
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.	

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

ENCLOSURE	
Housed in a rectangular case suitable for DIN Rail mounting. Housing molded from flame retardant plastics recognized by UL as UL94-V0.	
Colour	Grey
Dimensions (Maximum)	(W)71mm x (H)115mm x (D)67mm

APPROVALS
EN61326-1:2013 for CE Marking and RCM Labelling
Title 47 CFR, Part 15 Class A for FCC Marking
UL & C-UL listed to UL916, File Number E242628

ANALOGUE MODE	
Input accuracy	±0.1 V
Input impedance	~75 kΩ
Input resolution	~10 mV
Output accuracy	±0.1 V (RLoad > 2 kΩ)
Output resolution	~40 mV

DIGITAL MODE	
Output current (Max)	10mA
Output voltage swing	0.3V – 9.5V @ 10mA
Input voltage range	0V – 10V
Input impedance (Dry)	~8.8kΩ
Switching threshold (Dry)	4.5V
Input impedance	~75kΩ
Switching threshold	5V
PWM duty cycle accuracy	±5 %

TEMPERATURE MODE (With Innotech SEN Series Detectors)	
Nominal sensing range	-5°C to 60 °C
Accuracy	±3.5%FS (R25 °C = 10 kΩ)

TRIAC OUTPUTS	
4 TRIAC outputs switch 24VAC Power Supply through to the outputs	
Current rating	Min: 20mA / Max: 250mA
Modes	Modulated PWM or Digital ON/OFF
Pilot relays recommended when switching high voltage/inductive loads.	
Modulation On-Delay staggered between channels	

UNIVERSAL INPUTS / OUTPUTS

Total of 7 UIOs available, which can be configured with software as shown below:

UIO Type		Input Range	Output Range
Analogue Input		0 – 10 V DC	0 – 10 V DC
Dry Digital Input		Open or Closed	OFF or ON
Voltage Digital Input		0 – 10 V DC	OFF or ON
Thermistor Input		96 kΩ – 677 Ω	-50 °C to 100 °C
LUX Sensor Input	Nominal	20 kΩ – 400 Ω	3 to 1000 LUX
	Full Range	1MΩ – 0 Ω	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 – 10V Square Wave 20ms Min. ON Time 20ms Min. OFF Time	0 to 25 pulses per second ±1 pulse accuracy
Analogue Output		0 to 100%	0 – 10 V DC
Digital Output		OFF or ON	0 or 10 V DC
PWM		0 to 100%	0 to 100% Duty Cycle @ 13Hz

COMMUNICATIONS

1 RS485 serial communication channel

- Optimized for fast data transmission with IG01 Sub System Gateway
- Provides Net comms only if used without IG01
- Communication to handheld Commissioning Tool (CT01)
- 5 way pluggable screw terminal connector

1 innTOUCH serial communication interface

- Single wire serial communication channel for data transmission with the innTOUCH Smart Sensor

Status LEDs

MM01C

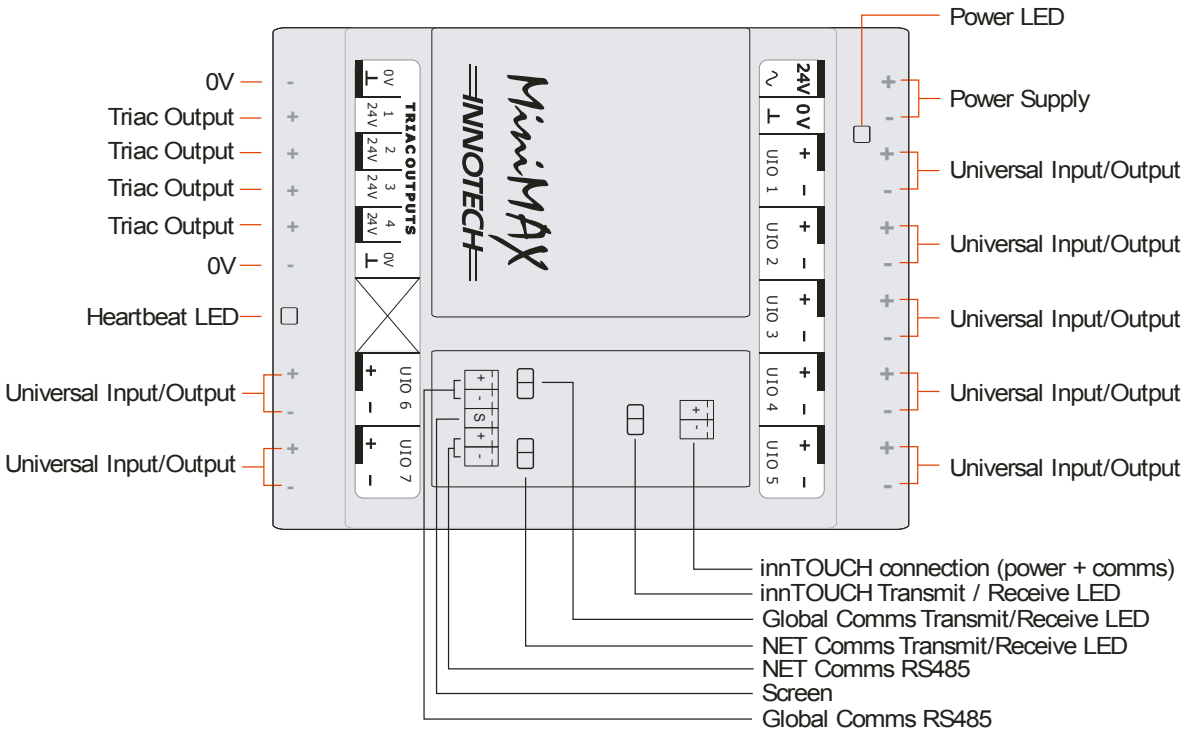
LED Indicator		LED Colour	Description
Power		Red	Power is ON
Heartbeat		Flashing Red	Device status OK
Communication	Net	Red	Data transmit
		Green	Data receive
	Global	Red	Data transmit
		Green	Data receive
	innTOUCH	Red	Data transmit
		Green	Data receive

MM02C

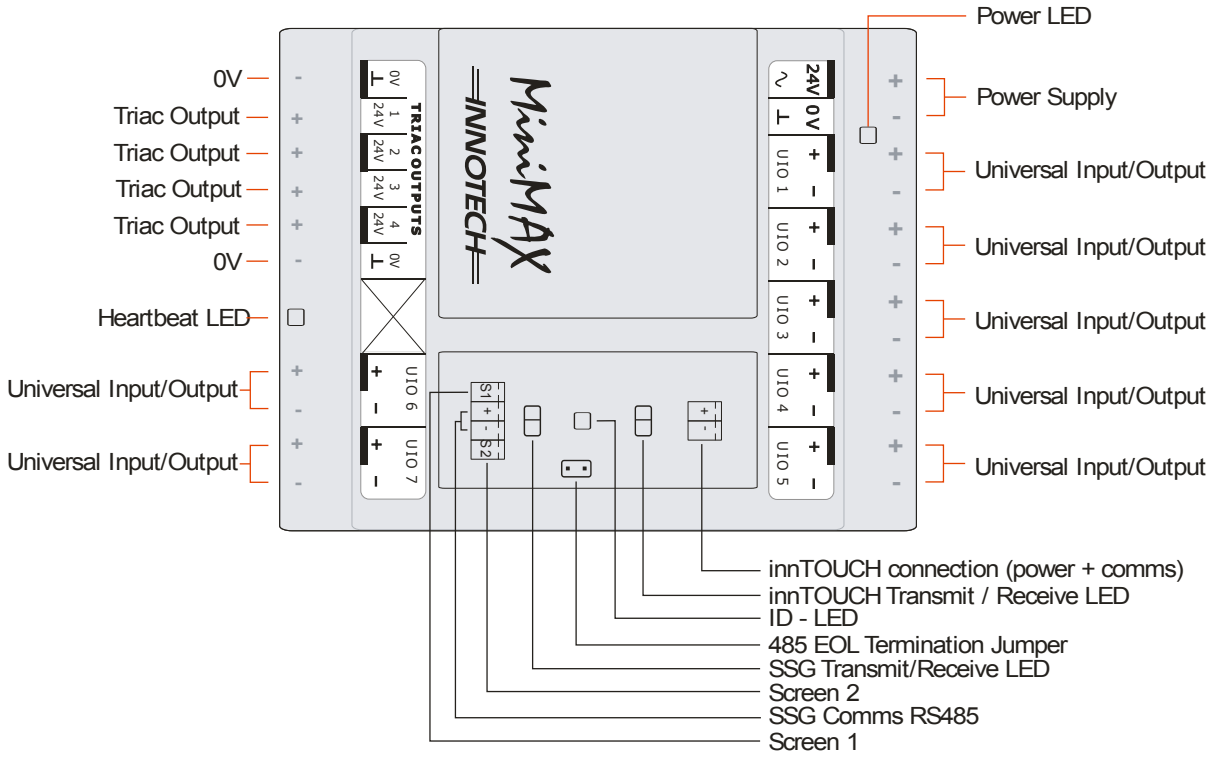
LED Indicator		LED Colour	Description
Power		Red	Power is ON
Heartbeat		Flashing Red	Device status OK
Identification		Flashing Red	Helps locate a MM02C with a specific device address during commissioning using the Ping command in iComm, or another HMI tool. Can also be used to aid in assigning a specific device address to a particular MM02C.
Communication	Sub System Network	Red	Data transmit
		Green	Data receive
	innTOUCH	Red	Data transmit
		Green	Data receive

MiniMAX Connection Diagram

MM01C



MM02C



FCC Class A Notice

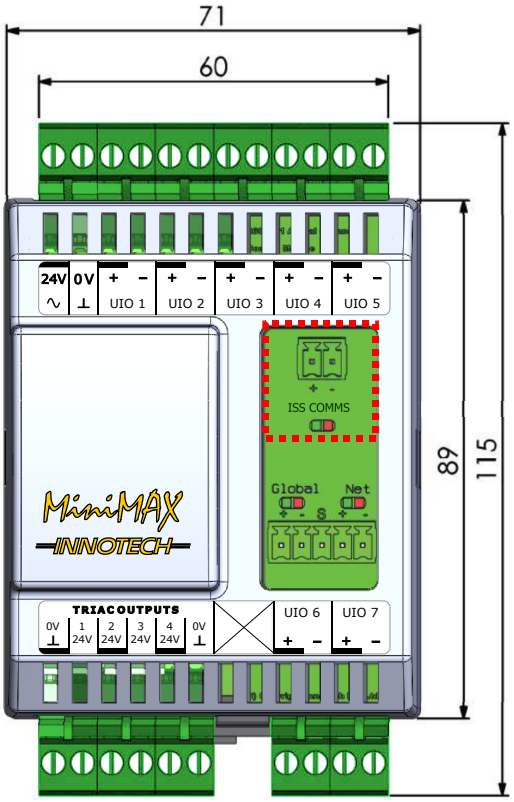
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

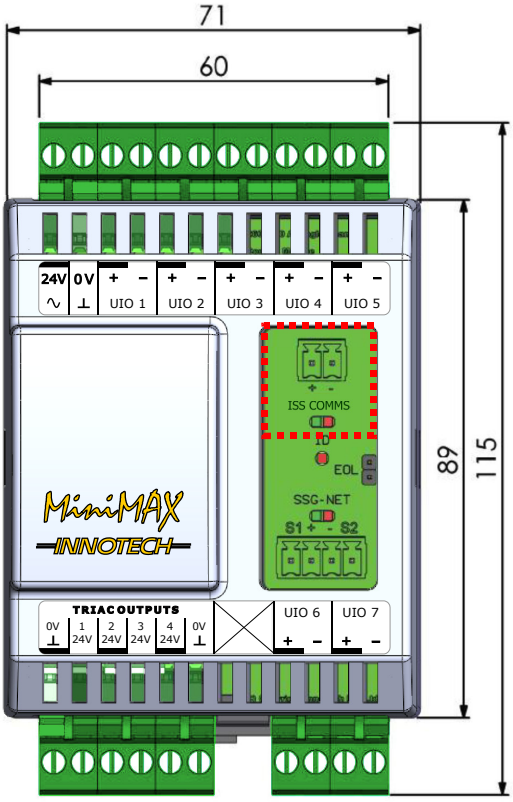
Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment 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.

MiniMAX Dimensional Diagram

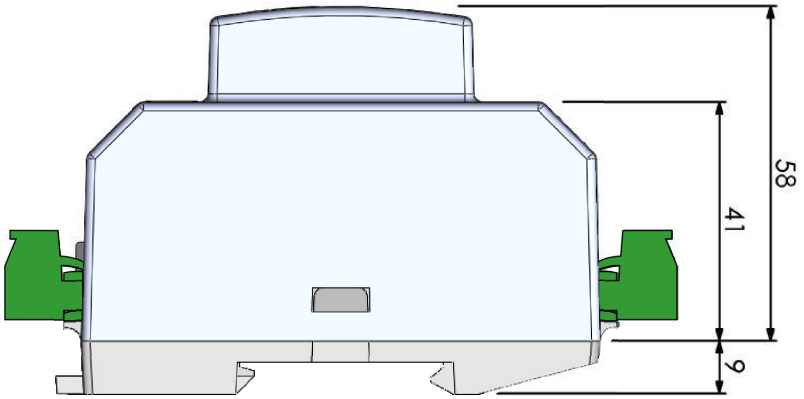
MM01C



MM02C



MM01C and MM02C



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