

## Models:

MT01 240V 4 Channel Time Switch with Optimum Start

## MT01

## MAXTime

## Overview

The Innotech MAXTime is a 4 Channel programmable 365 day time switch with optimum start capabilities. Its applications include air conditioner plant scheduling and usage optimising, lighting, security and virtually any application that requires events to occur at a scheduled time.

## Features

- 4 Independently programmable Relay channels with 10Amp @ 240VAC Capability
- After Hours capability on all channels
- 4 line, 80 character backlit Liquid Crystal Display
- Optimum Start on All Channels with Thermistor inputs
- 32 On/Off Weekly Events per Channel
- 20 On/Off Yearly Events per Channel
- 20 On/Off Master Yearly Events (All Channels)
- User Programmable After Hours Timer
- Current Time and Date (Battery Backed)
- After Hours Usage Log (Battery Backed)
- Automatic Daylight Savings Adjustment
- All Configuration and Schedule Data is stored to non-volatile memory
- Calibration function for Thermistor inputs
- Operates on 24 or 240VAC
- DIN Rail mountable

## Approvals

The Innotech MT01 conforms to:

- Electromagnetic emission and immunity requirements according to standards EN55011 (CISPR11) and EN50822 for RCM Labelling
- Designed and tested in accordance with IEC61010-1, Edition 3.0:2010 Safety Standard



## Application


The MAXTime can be used in a variety of situations that require automatic on/off scheduling. Its optimum start functionality make it particularly useful for Air Conditioning applications.

- Air Conditioning scheduling
- Optimum Start Function reduces power consumption
- Automatic Security Light activation
- Timed control of Plant and Equipment
- Internal After Hours Timers

## Specifications

### Power Supply

- 240VAC + 10% @ 50/60Hz **OR**
- 24VAC + 10% @ 50/60Hz
- Power Consumption: 7VA Max

 When powered by 24 VAC, the operating voltage must meet the requirements of safety extra low voltage (SELV) to EN 60730 terminals.

### Sensor Wiring

1. Do Not connect 24V or 240VAC to “IN+ or IN-” terminals.
2. Screened cable should be used between the sensor and the MT01. The screen is terminated to the IN- terminal.
3. The temperature sensor is connected between the “IN+ and IN-” terminals.

### Temperature Ratings

- Storage: 0 to 50°C non-condensing
- Operating: 0 to 40°C non-condensing

## Enclosure & Mounting


The Innotech MAXTime 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): 89mm (l) x 107mm (w) x 69mm (d)

## Installation

- The MAXTime 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<sup>2</sup> wire.
- Wire in accordance with Innotech connection diagrams and local bylaws or refer to your local distributor.

 Both a 240VAC supply and a 24VAC supply should NEVER be connected at the same time.

 This product should only be installed by qualified personnel.

## Outputs

- 4 x 10A @ 240 VAC Relays, Normally Open.

## Inputs

- 4 x 10K NTC Thermistor / Dry Contact Digital Inputs Thermistor  
Input Range: 0°C to 50°C
- The Controller can be configured for use in any one of the four options shown in the table below:

## Input Configuration

MT01		
Option	Optimum Start Sensor	After Hours Push Button
1	✗	✗
2	✓	✗
3	✗	✓
4	✓	✓

## Interface

The interface of the MAXTime comprises of a 4 line, 80 character backlit Liquid Crystal Display (LCD) with Directional Cursor Keys, Escape (#) and Enter keys. A menu system with on-screen user instructions ensures ease-of-use.


The Default screen of the display shows the current time and status of all relay channels. Pressing Enter on the keypad will take the user to the menu system where schedule and configuration changes can be made. The display always returns to the default screen if no keys are pressed within two minutes.

The Schedule Menu allows the user to Add, Edit or Delete Weekly and Yearly Schedules. Weekly Schedules require a Start and Stop time in Hours, Minutes and Day of Week. Yearly Schedules require a Date, Month and Year. The Yearly schedule will override all weekly schedules from 0:00 of the Start Date to 24:00 of the Stop Date. i.e. A Weekly Schedule for Monday 9:00 to Monday 17:00 on Relay Channel 1 will activate that relay every Monday between 9:00 and 17:00. If however, a yearly exception schedule set to Start on 2nd September 2002 and Stop on the Same day, will override the Weekly Schedule to off, since 2nd September 2002 is a Monday.

In addition to the Individual Yearly Schedules for each channel, Schedules entered into the Master Yearly Schedule will override all weekly schedules on all channels. This is a convenient way to add holiday periods to all channels instantly.

## After Hours

The After Hours features can also be accessed from the Schedules menu. This screen will display the Time remaining for any channels where the after hours function has been activated. The Total accumulated hours of After hours usage for each channel (battery backed log) and the After Hours delay can be adjusted by the user in 15 minute intervals from 15 minutes to 8 hours.

 The After hours timer cannot be activated if that channel is currently activated from a schedule. Also, if the After hours timer is triggered prior to the start of a scheduled event, the After hours log will accumulate only for the time used outside the schedule.

To reset the accumulated After hours log for a particular channel, press and hold the ENTER Key for 5 seconds while the accumulated time is displayed. The After hours log for that channel will then be reset back to zero.

The Clock Menu allows Setting of the System time and the Daylight Saving Parameters. When the System time reaches the calculated Daylight Saving Start Date, the System time will advance by one hour. When the System time reaches calculated Daylight Saving Stop Date, the System time will retard by one hour. Both the System time and Daylight Saving Parameters are battery backed and will be retained in the absence of a supply voltage.

The Calibrate menu can be used to view the measured temperature when a thermistor is connected to any of the input terminals. The measured value can then be adjusted by an offset value which will change the measured temperature as seen by the optimum start algorithm.

## Optimum Start

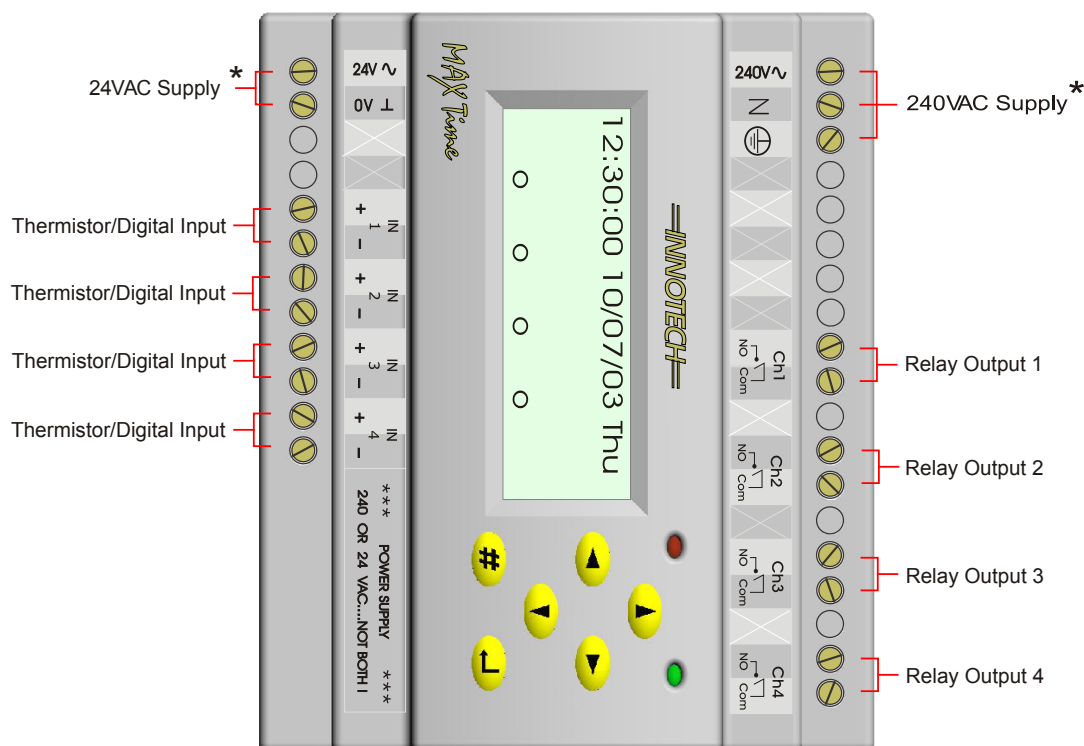
The Optimum start (OptStart) menu is used to configure parameters and enable/disable the optimum start control algorithm. When enabled, the optimum start will affect all schedules for that channel. The optimum start parameters are:

1. Setpoint  
Desired temperature to be achieved at occupied time (scheduled start time).
2. Alpha  
A smoothing filter applied to changes to the optimum start output.
3. Deadband  
This defines the total temperature deadband.
4. Heat Value  
This is a parameter of the building the optimum start is used in. The optimum start uses this value to estimate the time required to start heating before scheduled time. Each time the optimum start runs, it will recalculate this value and apply the alpha value from parameter 2. This parameter is in °C/Hour since it is the number of degrees Celsius that the air conditioning plant can heat the building within one hour.
5. Cool Value  
As per Initial Heat except applies to cooling.
6. Maximum Prestart  
In minutes - This is the maximum number of minutes the optimum start is allowed to start before the scheduled time.

## CAUTION

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

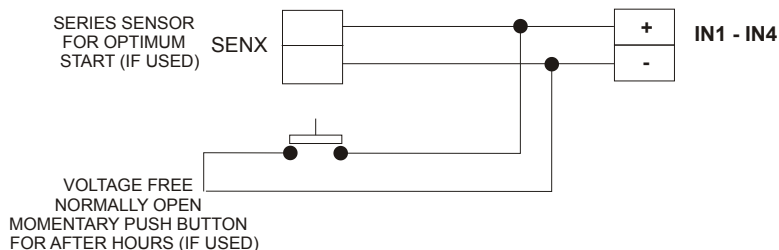
1. Never touch the I/O terminals while power is being supplied.
2. Never attempt to disassemble the unit while power is being supplied.
3. Emergency stop circuits, limit circuits, interlock circuits and similar safety measures must be provided.
4. The TIMESWITCH outputs may remain On or Off due to burning 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.



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Use only 240VAC OR 24VAC, NOT BOTH!

### INPUT WIRING



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