

The **Micha** GPS Interrupter Module is designed to interface directly with the Micha range of CP controllers, and can also be used as a stand-alone, programmable interrupter with other equipment. Two outputs are available; an optically isolated switch rated at 70V/50mA, and a MOSFET, rated at 100V/2A. GPS is used to provide an extremely accurate UTC time which allows a number of separate modules to be synchronised with each other. An antenna is essential to receive satellite data, and this should be positioned externally for optimal signal strength, ideally away from any metal structures.

### Main Features:

- GPS Accuracy ( $\pm 3mS$ )
- 10-30VDC & 20-60VDC versions
- Low Power: approx. 0.35W/24V
- -5°C to +55°C operating range
- 30 Programmable Sequences
- Non-volatile Memory
- Opto-isolated output
- Switched power output
- Alphanumeric LCD display
- LED status indicators
- DIN-rail mounting
- 106mm x 90mm x 45mm

### LED Indicators:

**Blue:** Steady when power is first applied. Flashes at 1Hz when satellite synchronisation is achieved with UTC, Latitude and Longitude data received.

**Green:** Steady when a future program is in memory. Flashes at 1Hz when running a Program.


**Red:** Illuminated to indicate the output is Active / ON.

### General Specification:

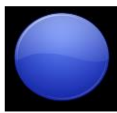
Module size:	106 x 90 x 42mm (excluding SMA connector) DIN-rail clip on rear fits standard 35mm 'top hat' profile (TS35 DIN 46277) Enclosure material: Self-extinguishing PC/ABS UL94-VO Colour: RAL 7035
Module weight:	0.2kg (Antenna PN 103274: 0.08kg)
Power consumption:	25-30mA at 12VDC   12-15mA at 24VDC   5-7mA at 48VDC (all nominal)
Part Numbers:	103391: Supply voltage 10VDC to 30VDC 103392: Supply voltage 20VDC to 60VDC
Manufacturer:	The Micha Design Company Limited
Country of Origin/HS Code:	United Kingdom / Commodity Code: 90328900



**Using the GPS Interrupter.**

Operation	LED	LCD Display
<p><b>Power Up</b></p> <p>At power up, the display shows a default time and date as shown. With a good GPS signal, the UTC time will appear within around 30 seconds, and GPS synchronisation within 60 seconds. When synchronised, the blue LED flashes at 1Hz and the * symbol appears on the display.</p> <p>By default, the time and date are shown.</p>	<p>● — ○ ○</p> <p>● -- ○ ○</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>10:00:00 01-Jan-2001</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-top: 10px;"> <p>UTC: 15:04:17 * 07-Aug-2017</p> </div>
<div style="text-align: center;">  </div>	<p>● -- ● -- ●</p>	<p>When a program is running, the bottom line of the LCD display alternates between showing the date and the number of the Program that is running.</p>
<p><b>Menu 0</b></p> <p>Press <b>UP</b> and the display will show the Menu number</p> <p>This menu can be reached at any time by pressing <b>MENU</b> and <b>DOWN</b> together.</p>		<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>**** Menu 0 **** Information</p> </div>
<p>Press <b>DOWN</b>: the display will show the current Latitude and Longitude: (Satellite synchronisation required.)</p>	<p>● -- ○ ○</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Lat: 51°49'19.1N Lon: 000°49'85.2W</p> </div>
<p>Press <b>DOWN</b> again: pressing <b>SELECT</b> turns ON the output. (If already Active, the output does not change)</p>	<p>● -- ○ ●</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Test Output: Press --&gt; Select</p> </div>
<p>Press <b>DOWN</b> again: press <b>SELECT</b> to reset all programs. The display shows "Are you sure ?" – press <b>SELECT</b> again to confirm</p>		<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Reset Programs: Press --&gt; Select</p> </div>
<p>Press <b>DOWN</b> again: the installed software number and version is displayed.</p>		<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Software: 802449 Ver 1.0</p> </div>

**Note:** In the event the GPS signal is lost after GPS synchronisation, the module will continue to run on its internal clock, with an accuracy of approximately ± 1s per day. However, the "\*" symbol will disappear from the display, and the blue LED will be illuminated continuously.



## Setting up a Program

Procedure	LED	LCD Display
<p><b>Menu 1</b></p> <p>From Menu 0, press <b>MENU</b> to get to Program 1.</p> <p><b>Notes:</b></p>		<pre>**** Menu 1 **** Program 1</pre>
<p>Times shown refer to the GPS time, which is UTC. Although it is possible to program a time and date in the past, these sequences will be ignored.</p> <p>Press <b>DOWN</b>: the display will show the Program Status. Press <b>UP</b> or <b>DOWN</b> to toggle the status, press <b>SELECT</b> to store in memory. Status <u>must</u> be set to <b>Disable</b> to allow changes to any of the following settings.</p>	<p>●-- ○ ○</p>	<pre>Program 1: Status: Disable</pre>
<p>After <u>any</u> change, press <b>SELECT</b> to confirm and store the entry.</p> <p>Press <b>DOWN</b> again: to set the Program Start time and date, press <b>SELECT</b> and the 'hours' field will start flashing. Press the <b>UP</b> and <b>DOWN</b> keys to select the required hours. Press <b>SELECT</b> again to move on to the next field.</p> <p>Continue until all fields are updated and the display shows the required Program Start time and date:</p>	<p>●-- ○ ●</p>	<pre>Program 1: Start 12:00 01-Jan-17</pre> <pre>Program 1: Start 15:30 07-Aug-17</pre>
<p>Maximum Run Time: 23hrs 59mins.</p> <p>Press <b>DOWN</b> again and press <b>SELECT</b> to set the Run time (Program duration from starting).</p>		<pre>Program 1: hh:mm Run Time: 01:00</pre>
<p>ON time can be set to any value between 0.2s and 99.9s</p> <p>Press <b>DOWN</b> again and press <b>SELECT</b> to set the ON time (output is Active)</p>		<pre>Program 1: ON Time: 10:0s</pre>
<p>OFF time can be set to any value between 0.2s and 99.9s</p> <p>Press <b>DOWN</b> again and press <b>SELECT</b> to set the OFF time (output is inactive).</p>		<pre>Program 1: OFF Time: 10:0s</pre>
<p>The Output can be set to start the Program with the output ON or OFF.</p> <p>Press <b>DOWN</b> again and press <b>SELECT</b> to alter if the Program should start with the ON period or the OFF period.</p>		<pre>Program 1: Output Start:ON</pre>
<p>** Remember to now <b>Enable</b> the Program if you wish it to run. **</p>		
<p>Programs can be entered with a Start date and time in any order.</p> <p>If an additional future program is required, press <b>MENU</b> to go to the next program.</p>		<pre>**** Menu 2 **** Program 2</pre>

Programs are retained in memory during power loss, but if power is lost mid-program, when power returns the program will not restart. Before a GPS time signal is obtained, the green LED may be temporarily illuminated to indicate a stored, enabled program with a start date later than the default.



**Running a Program**

**Procedure**

**LED**

**LCD Display**

**Note:** The software scans all of the Enabled Programs in order, 1 to 10. If a Program Start Time matches UTC time, this Program will start and all other programs will be ignored until the Program has ended

**Menu 0**

If any Program is set to commence in the future, the green LED will be illuminated constantly.



UTC: 15:04:17  
\* 07-Aug-2017

**Note:** When a Program is running, it is still possible to manually activate the output using the 'Test Output' function.

When a Program starts, the green LED will flash and the main display will alternate between showing the date and the Program that is running. The red LED will be illuminated when the output is ON.



UTC: 15:30:17  
Prog 1 Running

**Terminals and connections:**

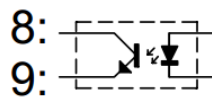
**POWER IN**

3: V+  
4: V-

1: Power in +V  
2: Power In -V

10-20VDC or 20-60VDC (internally fused)

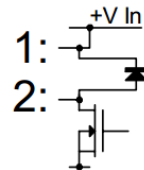
**OPTO SW.**



8: Opto-switch +V  
9: Opto-switch -V

Connect to the Disable input of the Micha CPC. Can be used as VFC contact to other equip.

**RELAY SW.**



1: +V (fused V+ in)  
2: Switched -V to V- in  
(Internal flyback diode across 1 & 2)

These terminals can be used to switch an external contactor. Max. current: 2A

**RS485**

5: A  
6: B  
7: COM

*Future development – available Q3 2018*

**All terminals: plug and socket type, rising clamp, max. cable: 2.5mm<sup>2</sup>. Antenna: SMA female.**

**Fuse:** The module and switched output (terminals 1 & 2) are protected by a 2A (max) 20mm fuse.

**VR1:** Potentiometer VR1 – fitted by the fuse – can be used to adjust the contrast of the LCD display.

**Terminology:**

**Program:** A sequence of ON and OFF times which activate (ON time) and deactivate (OFF time) the GPS Interrupter Output. Each Program has a Start time, a Run time, and the Program can start with the Output ON or OFF

**Output:** The GPS Interrupter Output will be 'Active' during the ON time, and inactive during the OFF time. Where an output is described as 'Active' or 'ON', it means that the module outputs are switched on and a connected CP Controller is considered to be DISABLED, or 'Interrupted'.

Document History:	Date:	Software:	Notes:
Version 1	08-Jun-2018	802 537 V1.0	First issue.
Version 2	10-Sep-2020	802 537 V1.0	Clarification of GPS usage.