

SOFTMARK

USB Hydrocarbon Gas (HC) Monitor



Created by Softmark
PO Box 1609
Hornsby NSW 2077 Australia
softmark@ar.com.au www.ar.com.au/~softmark

Copyright © 2005-2006 Softmark

The hydrocarbon gas sensor can be used for industrial and domestic hydrocarbon detection. It can be used as a petrol vapour detector and in other safety equipment. Softmark's USB Hydrocarbon Gas (HC) Monitor is set and controlled via the USB bus. The Monitor can be controlled by, and interact with, your applications. The Monitor has a provision for modelling how your sensor behaves and is a great tool for developing your own application, which can include more hydrocarbon gas sensors. The module is connected to a USB port. Windows will automatically find it and the project will be ready to use. Software for this card works on W98/W2K/XP

Note: Softmark's USB Hydrocarbon Gas (HC) Monitor is designed only as a development tool and cannot be relied on as a calibrated reference to read hydrocarbon levels. Softmark does not accept any liability for the consequences of the use of the product.

Description

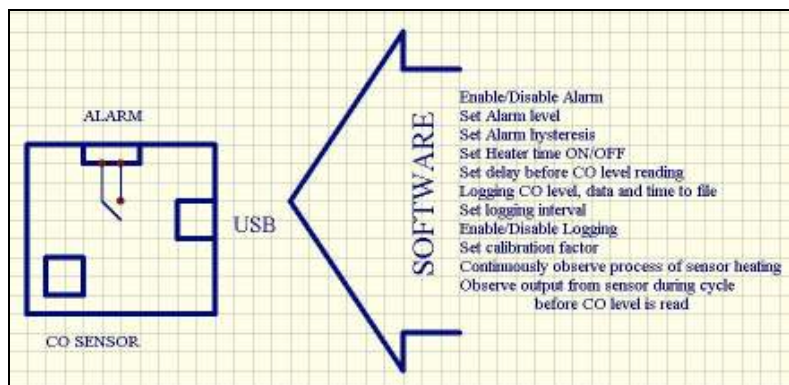
The USB Hydrocarbon Gas (HC) Monitor enables you to monitor propane, other LPG, iso-butane (200ppm – 10,000ppm).

It features a hydrocarbon gas sensor and the PC is used to control it. The module is connected to the PC via USB, and the PC can be used to send an alert email if hydrocarbon gas levels are too high (not available in version 1.0). The module has an electrical contact relay which can be used to switch a device, for example, a light or a fan, on/off.

Software description

Software comes with the module and it will give you all the necessary functions to control the process of measuring hydrocarbon gas levels. The software can be used to set:

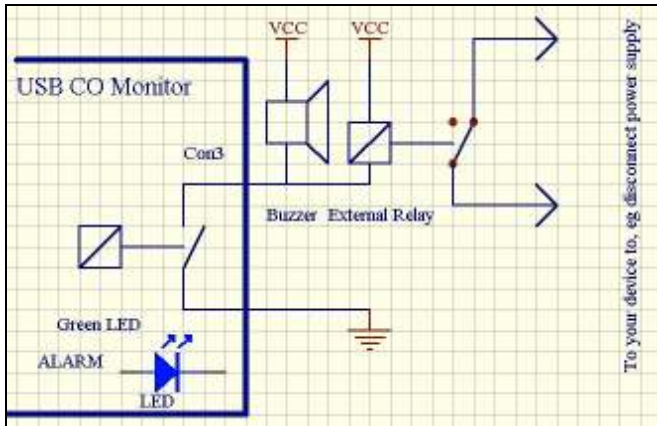
- heater of the hydrocarbon gas sensor on (the heater must always be on)
- time on for sensor heater (not applicable)
- time off for sensor heater (not applicable)
- delay time before reading the hydrocarbon gas level (not applicable)
- alarm level
- sensitivity of your sensor (VR1)
- calibration factor to convert an arbitrary number to hydrocarbon gas concentration in ppm



How we read hydrocarbon gas levels

Connect the module to the PC via the USB, setup software (installation details are supplied with the module), and run the software. The arbitrary number is multiplied by the calibration factor and the hydrocarbon gas concentration level is provided in ppm. Due to this, you have a greater opportunity to fully control the hydrocarbon gas sensor. The same software can be used to control different sensors, but the calibration factor will need to be changed. All software settings are saved and next time you use the software, these will appear.

How the Monitor can interact with other devices



The hydrocarbon gas level is monitored and if a dangerous level is reached, an “Alarm” LED is switched on, and contact from RLY can be used to power any other device, for example a siren etc.

Circuit descriptions

The circuit diagram is provided in the module kit.

Same module, different sensors

Softmark also supplies a generic module which does not include any sensors. The Monitor module is designed for a 5V heater which is built inside the sensor. Current going through the heater can be set by hardware (R7). TP2 can be used to measure the current going through the heater. Time on and off for the heater can be set by software. The picture below shows the socket for the sensor. There are two setting options for the sensor, but both provide the same results. Please read the technical specifications for your sensor before you plug it into the module. Alternatively, ask us for a recommendation, if required.



USB Hydrocarbon Gas (HC) Monitor module with no sensor



Sensor pins are symmetrical and the sensor can be connected in two different positions.

Testing the card and installation

Connect the USB Hydrocarbon Gas (HC) Monitor card with the USB port in your PC. The USB cable (A-B type) is included in the kit. The red LED1 should be on. This diode only shows that voltage from the USB bus is being applied to your board. If LD2 is off, it will go on only if the alarm function is activated (when hydrocarbon gas concentration levels exceed a set threshold).

The Windows operating system will try to find and talk to the USB Hydrocarbon Gas (HC) Monitor (IC1). After a few seconds (usually 1-2 seconds), you will get a message on your screen that a new device was found. Following this, Windows will start installing the driver for this kit. This will only take a minute and does not have to be done again.

Note that information about installing drivers can be found on files supplied with the kit.

After the driver is installed, the next time you use the Monitor, the Windows operating system will automatically find the driver for your Monitor. No other setup will be required.

Important

Power supply not required

The USB Hydrocarbon Gas (HC) Monitor does not need a power supply. The card has a connector which supplies 5V (+5V and GND line). This voltage is taken from the USB bus. The current consumed by the USB Hydrocarbon Gas (HC) Monitor card is determined by the number of actual relays on. When all relays are active, the current consumption is below 50mA. A maximum of 50mA can be additionally taken from the connector (CON2) for your other applications, if required.

Copyright © 2005 Softmark

All rights reserved. The information presented in this document is believed to be accurate and reliable and may be changed without notice. No liability will be accepted for any consequences of its use.