SIM
Serial Interface Module
IECEx ITA 07.0017x

Description
The iMAC SIM modules come in three variances: SIM G, SIM G2 and SIM T. The SIM G communicates to one Gasguard controller. The SIM G2 communicates with two Gasguard controllers. The SIM T is a serial interface module for RS485 communication to the Trolex 9042 Controller. The SIM module uses the Modbus communication protocol to transfer data from the Trolex 'host' system to the iMAC system. The SIM is the Master and the host system is the Slave.

The processor in the iMAC SIM is powered from the iMAC communication line. This arrangement assures the SIM can send back status information about the serial link even if there is no power to the host system. The iMAC system measures resistance out to the SIM module and maintains a count of communication errors. The SIM processor and iMAC line are electrically isolated from the RS485 interface and the host system communication line. The RS485 driver side of the SIM module requires power to effect communications. The electrical isolation eliminates the problem of ground loops between the host system and the iMAC system. The SIM is a ZONE 0 intrinsically safe module. The RS485 side of the SIM should be powered from an intrinsically safe power supply with an output of 9 to 16VDC. The RS485 interface is also intrinsically safe. The iMAC SIM is programmed to interface to specific host systems such as Trolex or Gasguard gas monitoring systems.

Features
- RS485 serial communication port
- Modbus RTU Protocol
- On line configuration from iMAC Controller
- Low cost installation
- DIN rail or foot mount
- LED indication to aid fault finding

LED Status Indication
There are two LEDs visible from the front of the module to indicate iMAC communication status and RS485 communication status. Both LEDs are powered from the iMAC communication line.

RS485 LED
RS485 LED flashes every time the SIM module reads data from the 9042 Controller.

iMAC LED
Slow flash The module is communicating with the iMAC Controller, no alarms are active and the RS485 port is working correctly.
Two flashes The module is being roll called by the iMAC Controller.
Three flashes Address clash – the module has the same address as another module connected to the signal line.
Fast flash RS485 communication port is not functioning correctly.

Data Mapping
The iMAC SIM Module publishes four words of digital data and 12 words of analogue data onto the iMAC communication line. The iMAC SIM also retrieves 20 words of setpoint and setup data from the Trolex system. Please refer to the iMAC SIM Data Table Technical Information Sheet iMACB027 for a detailed data table layout.

Words 1 to 4 – digital data
The first four digital words contain the trip/alarm data from the eight 9042 channels and communication status from the SIM module.

Words 5 to 16 – analogue data
Words 5 to 12 are the eight input channel analogue values from the 9042 Controller. Words 13 to 16 provide SIM firmware version, an RS485 communication error count and the SIM serial number.
Programming Procedures

For programming information see the iMAC User Manual or Technical Information Sheet iMACB005.

SIM Rollcall

The roll call displays the following information.

SIM Programming Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter 1</td>
<td>iMAC Address</td>
<td>1..255d</td>
</tr>
<tr>
<td>Parameter 2</td>
<td>Trolex 9042 Modbus Address</td>
<td>1..1Fh</td>
</tr>
<tr>
<td>Parameter 3</td>
<td>Not Used</td>
<td></td>
</tr>
<tr>
<td>Parameter 4</td>
<td>Not Used</td>
<td></td>
</tr>
</tbody>
</table>

Parameter 1: Is the iMAC Address of the SIM. Setting this to 0 will put the SIM offline. This is the base address for the first word of data. The other data words follow consecutively.

Parameter 2: Is the Modbus address of the Slave device, i.e. the Trolex 9042 Controller. This setting should match the Modbus address set in the 9042 Controller’s communication settings. A SIM can only be connected to one 9042 Controller and therefore the factory default address of 1 is usually left unchanged.

Parameters 3 and 4: Not used

Specifications

**Power Supply:**
9-16 VDC IS power to RS485 side
Current Consumption: 9VDC = 9mA, 12VDC = 18mA and 16VDC = 29mA

**RS485 Communication Port:**
Baud Rate = 2400 bps
Data Bits = 8
Parity = None
Maximum serial cable length = 300m

**iMAC Communication Port:**
iMAC 2 wire Multi-drop Line
500 to 1000 baud
Maximum distance between SIM and iMAC Controller = 5000m depending on cable used and the number of iMAC modules connected.

**Module Dimensions:**
75 H x 22.5 W x 98 D

Equipment List

121915 iMAC SIM G
121916 iMAC SIM G2
121917 iMAC SIM Trolex

Connection Diagram

![Connection Diagram of all SIM Modules.](image)

General Arrangement

![General arrangement of all SIM modules.](image)

Technical Support

imacuser@ampcontrolgroup.com

---

AMPCONTROL ELECTRONICS
Ampcontrol CSM Pty Ltd ABN 35 000 770 141
7 Billbrooke Close CAMERON PARK NSW 2285
Phone: (02) 4903 4800
Fax: (02) 4903 4888
E-mail: electronics@ampcontrolgroup.com
Web site: www.ampcontrolgroup.com