



MCG 101

**GLOBAL SATELLITE
ENGINEERING**



MCG-101 Users Manual



Views

Top



Rear



Front



Top/Rear



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Introduction

System Theory

The MCG-101 was designed to provide a the most powerful and versatile Iridium communications system to offices, remote locations, aircraft, and marine.

The system provides an intelligent solution for Iridium satellite phones to operate as a telephone, Internet gateway, intelligent GPS device, send/receive SMS, and attach to other devices through RS232 or CAN bus.

Features included:

Telephone/POTS¹ line Attach any standard 2-wire telephone or PBX and you can make and receive calls over Iridium. (diagram of telephone connected to MCG101)

Ethernet port Attach to any computer and you can connect to the Internet, setup your MCG-101 PBX and call routing features, and monitor the status of your MCG-101. (diagram of computer connected to MCG101 through Ethernet port)

Iridium DPL² port Attach an Iridium DPL handset and you can make and receive phone calls plus view the status of the Iridium network through the integrated LCD screen. (Diagram of DPL handset connected to MCG101)

RS232³ port Attach to a computer or remote terminal to connect to the Internet, make standard data calls, or send/receive SMS. (diagram of computer connected to MCG-101 through serial cable)

CAN⁴ bus Attach to any CAN network such as Engine Management systems and your MCG-101 can transmit critical information such as temperatures, engine failures, and alarms. (diagram of industrial system such as a commercial refrigerator/truck/industrial equipment connected to MCG-101 through CAN bus (3 wires))

Monitoring - The system health can be monitored locally by any computer attached to the local network, or remotely by a system administrator or technician. (diagram of computer screen with screen on page 9)

1 Plain Old Telephone Service
2 Digital Peripheral Link
3 Recommended Standard 232
4 Controller Area Network

GPS⁵ - an optional GPS receiver can track your location and send position reports via SMS⁶ or SBD⁷ when your MCG-101 is idle. (diagram of your imagination)

The MCG-101 was designed using 100% digital technology. This enables the system to provide clear, true to life audio, and eliminates any internal echo problems. For external interface portions of the system, such as an analog POTS telephone, echo cancellation is performed by a hardware echo canceler. The ASIC⁸ hardware based echo canceler is the ultimate in echo cancellation technology.

Overall, the MCG-101 is the ultimate Iridium telecommunications system available to fulfill the needs and demands of today's business, marine, and military needs.

5 Global Positioning System

6 Short Message Service

7 Short Burst Data

8 Application Specific Integrated Circuit

System Capabilities

System capabilities include all major PBX features, including:

Call features

- Authentication
- Automated Attendant
- Blacklists
- Blind Transfer
- Call Detail Records
- Call Forward on Busy
- Call Forward on No Answer
- Call Forward Variable
- Call Monitoring
- Call Parking
- Call Queuing
- Call Retrieval
- Call Routing (DID & ANI)
- Call Snooping
- Call Transfer
- Call Waiting
- Conference Bridging
- Database Store/Retrieve
- Database Integration
- Dial by Name
- Direct Inward System Access
- Distinctive Ring
- Do Not Disturb
- Flexible Extension Logic
- Interactive Directory Listing
- Local and Remote Call Agents
- Macros

Call features

- Predictive Dialer
- Privacy
- Overhead Paging
- Protocol Conversion
- Remote Call Pickup
- Remote Office Support
- Roaming Extensions
- Supervised Transfer
- Talk Detection
- Three-way Calling
- Transcoding
- Voice mail
 - Visual Indicator for Message Waiting
 - Stutter Dial tone for Message Waiting
 - Voice mail to email
 - Voice mail Groups
 - Web Voice mail Interface
- Graphical Call Manager
- Predictive Dialer

Codecs

- ADPCM/G711/G722/G7231/G726/G729/GSM/iLBC/Linear/LPC-10/Speex

Protocols

- IAX
- SIP
- SCCP
- Traditional Telephony Interoperability
- FXS
- MF and DTMF support

Equipment Overview

MCG-101

The MCG-101 is a wall mounted satellite terminal that contains the Iridium satellite phone. The terminal contains an internal SIM card that must be installed properly for the system to function normally. The MCG-101 also has an exposed TNC connector for attaching the required external antenna. The status of the entire system can be monitored through an attached computer or through an optional DPL handset.

Installation

System Initialization

The entire system will require three (3) minutes to initialize. The system is ready for operation when the front panel of the MCG-101 displays green lights

System Operation

How to place a call to:

International

Dial 011 (country code) (phone number)

US

Dial 1 (phone number) or

or Dial 001 (phone number)

Iridium

Dial 8816 (phone number)

or Dial 008816 (phone number)

How to receive a call:

Dial the phone number of the Iridium SIM card installed in your MCG-108. Contact your Service Provider if you need assistance with your SIM cards.

How to make a data call via RS232:

Connect your computer to the MCG-101 via a cross over or null modem cable. Set your computer to connect at 19,200 bps 8N1 and setup a new dialup connection to Iridium. Verify that the automatic PPP dialup mode is disabled by dialing ****40 and then press 0 after the prompt.

How to make a data call via Ethernet:

Connect your computer to the MCG-101 via a cross over ethernet cable. Verify that the automatic PPP dialup mode is enabled by dialing ****40 and then press 1 after the prompt. Any attempt to go online will trigger the MCG-101 to automatically start a dialup connection. You can monitor the status by the In Use led or via an Iridium DPL handset.

Software Based Monitoring:

Software is available via our website at www.gsat.us that will allow you to monitor your PBX through any computer plugged into the Ethernet Switch. Simply download and install the software on any Windows 2000 or newer operating system, and plug your computer into the Ethernet Switch. The software also keeps a log of the activities of your PBX, and can be very valuable for diagnostics.

Some operating systems, such as Windows XP and Windows Vista may initially block the software from listening to the network. If you receive any messages stating Allow or Block access to your network, always choose Allow.

Remote Monitoring:

It is possible to monitor your PBX remotely, but will require the assistance of a Network Engineer. The MCG-101 transmits broadcast packets on ports 10000 and 10001, which in turn can be tunneled through a VPN, SSH, or other remote network software. Consult with a Network Engineer to evaluate your specific network needs.

LED Status Indicators

	Power	Signal	In Use	Error
Off	No Power	No Signal	Not in use	
Solid			In use	w/In Use flashing Upgrading Firmware
Slow Flash				
Fast Flash	Unit is booting		Pin Code Needed	
Solid w/1 Flash		Signal 20%		
Solid w/2 Flashes		Signal 40%		
Solid w/3 Flashes		Signal 60%		
Solid w/4 Flashes		Signal 80%		
Solid w/5 Flashes		Signal 100%		

System Functions/Extensions:

Code	Description
****10	Read IP address assigned to Ethernet port
****11	Read Serial Number
****12	Read Firmware Version
****13	Read Bootloader Version
****20	Read and/or set pin code for Iridium network
****30	Read SBD status and enable/disable SBD
****31	Read GPS status and enable/disable GPS (if equipped)
****32	Read maximum meters in movement for GPS transmission via SBD (if equipped) (default 50)
****33	Set maximum meters in movement for GPS transmission via SBD (if equipped) (default 50)
****34	Read maximum time in seconds for GPS transmission via SBD (if equipped) (default 600)
****35	Set maximum time in seconds for GPS transmission via SBD (if equipped) (default 600)
****40	Enable or disable automatic PPP dialup for Ethernet port and restart
****50	Enable UDP logging for Ethernet port (additional software required)
****9	Remove all user preferences and customizations and restart

Remote Software

Overview









#1 Outbound Call: Ringing	 R...ll	#5 Idle	R...ll
#2 In Call: 5m30s	 R...ll	#6 Idle	R...ll
#3 Inbound Call: Ringing	 R...ll	#7 Idle	R...ll
#4 In Call: 10m5s	 R...ll	#8 Idle	R...ll

The monitoring software is arranged into two columns and four rows, representing satellite channels numbered 1 through 8. A short text description is provided of the current status of the phone, along with the current signal level and server registration status. Each of these icons is explained in further detail below.

Display Sections



Icon Description

	No signal Check connections, antenna, and cable for faults. Check SIM card.
	Signal level 1 Very low signal level, check connections, antenna, and cable for faults
	Signal level 2 Low signal level, check connections, antenna, and cable for faults
	Signal level 3 Medium signal level
	Signal level 4 High signal level
	Signal level 5 Very High signal level
	Inbound Call This channel is currently active with an inbound call.
	Outbound Call This channel is currently active with an outbound call.

Dimensions and Weight

MCG-101 without mounting tabs

Height 2 in. (5.08 cm)

Width 8 in. (20.32 cm)

Depth 8 in. (20.32 cm)

Weight: 4 lb (1.8 kg)

Power Requirements/Specs

MCG-101

Power requirements	30W or 102 BTU per hour
DC input voltage:	10 to 30 V DC, 3-1.2 A
Environmental requirements	Operating temperature: 32 to 113°F (0 to 45°C) Storage temperature: -13 to 158°F (-25 to 70°C) Operating relative humidity: 10 to 85% (noncondensing) Operating altitude: up to 10,000 ft (3000m) Storage altitude: up to 15,000 ft (4500m)

Telephone Jack

Ringling REN – 2.5

RMS Ringling Voltage -45 V DC

On Hook Voltage -63 V DC