OnCell G2150I

Isolated Quad-Band RS-232/422/485 Industrial GSM/GPRS Modem

Features

- Quad-band 900/1800, 850/1900 MHz GSM/GPRS, GPRS Class 10
- Circuit-switch Data mode up to 14,400 bps
- Seperate RS-232 and RS-422/485 serial interfaces (G2150I)
- 2.5 KV RMS isolation for 1 minute for all serial signals (G2150I)
- 15 KV ESD serial line protection
- Vertical IP30 enclosure with SIM card protection
- LED indicators for GSM/BPRS, data transmission and signal level
- DIN-rail, wall mounting
- SMS Tunnel Mode
- Automatic PIN Entry
- Easy-to-use OnCell Configurator

RoHS Quad band 15 KV ESD CE FC

M2M Connection via Mobile Network

The widespread availability of cellular data networks presents another choice for machine-to-machine (M2M) communication today. Mobile telephony can be used to establish access to many sites where it is difficult to place land lines, such as in offshore applications, in the mountains, on the roof of a building, or by a highway. Whether used in location tracking devices, mobile Ethernet gateways, or for wireless data collection, cellular M2M offers mobility, encryption, more location options, and easier installation in a single package. For many situations, cellular M2M presents advantages that cannot be matched by hard wiring solutions, analog carriers, or satellite connections.

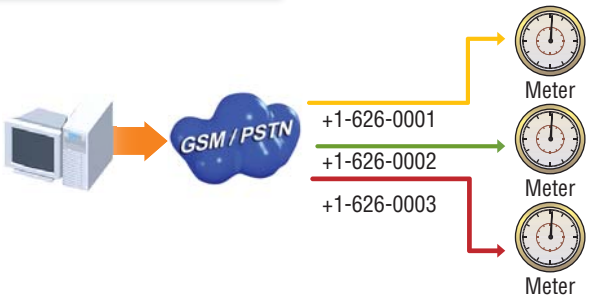
Cellular Network Technology

Modern wireless technology connects more than 2 billion cell phone users worldwide, using more than four times as many devices to manage connections. In different areas and countries, cellular operators offer different services. GSM is used almost everywhere, with upgraded service possible through GPRS and EDGE. Whereas GSM is considered 2G, GPRS is sometimes called 2.5G, and EDGE may be considered 2.75G. EDGE stands for “enhanced data rate for GSM evolution” and provides significantly better data transmission speeds. As for 3G, WCDMA/UMTS is the leading protocol for current GSM operators. In addition to GSM, there are also CDMA / CDMA2000 systems implemented in part of US, Australia, Japan, South Korea and so on, providing both voice and data services. The different systems compare is as follows.

Technology	Generation	Connection Type	Theoretical Max (kbps)	Carrier Max (kbps)	Typical Throughput (kbps)
GSM	2G	Circuit	------	9.6	------
GSM GPRS Class 10	2.5G	Packet	86.2	54.2	20-40
GSM Edge Class 10	2.75G	Packet	237	237	80-160
HSDPA	3.5G	Packet	>1800	>1800	>700
UMTS(W-CDMA)	3G	Packet	384	384	200
IS-95 (cdmaOne)	2G	Packet	------	14.4	------
CDMA 1 x RTT	2.75G	Packet	307	153	60-80
1 x EVDO (CDMA2000)	3G	Packet	>2000	>2000	300-500

CSD Data Connection

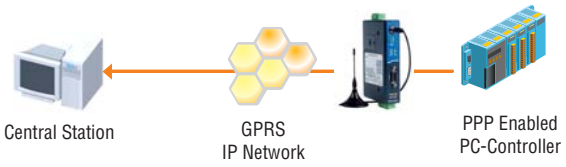
CSD (Circuit Switched Data) is the original form of data transmission developed for GSM systems. With a single radio time slot, CSD can transmit data at 9.6 to 14.4 Kbit/sec to both the GSM network and the PSTN switching subsystem over a direct call. Most of the time, transmission is initiated by standard AT commands. Since CSD provides direct modem access to remote devices, system extensions can be used without requiring the installation of cables and data lines. CSD overcomes the limitations of hard wiring and inaccessible terrain for easier, more flexible data collection and monitoring.



Dial-up polling topology

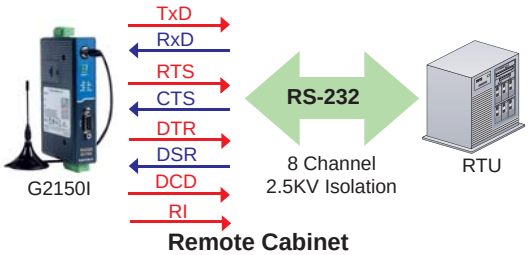
GPRS IP Connectivity

GPRS is packet-switched, which means that multiple users share the same transmission channel. It transmits only when there is outgoing data. At any moment, the available bandwidth can be dedicated immediately for users that are sending or receiving data. In general, a GPRS network can be viewed as a special IP network that offers IP connectivity to IP terminals. Devices such as PCs, embedded computers, and PPP-enabled PLCs can be easily connected to the IP network and the Internet.

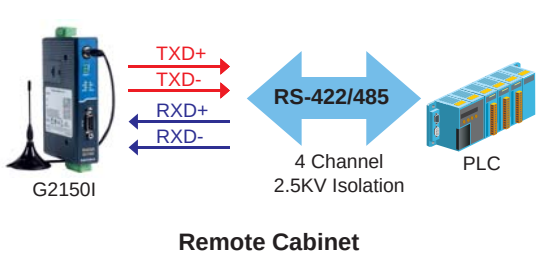


OnCell G2150I Introduction

The OnCell G2150I are industrial quad-band GSM/GPRS modems that transmit data and short messages (SMS) over GSM/GPRS mobile networks. They can be used to improve the efficiency of maintenance and communication, independent of operating skill. The OnCell G2150I are also designed to be mounted on a DIN-rail or on the wall. It has a 12 to 48V DC power input, allowing different types of field power sources to be attached. The serial ports are also protected by 15 KV ESD line protection, so the system is safe from electrical discharge. Separate RS-232 and RS-422/485 interfaces are built into the OnCell G2150I GSM/GPRS modem, each with 2.5 KV RMS isolation for one minute. The two serial interfaces on OnCell G2150I also make it ideal for attaching all kinds of devices, such as stand-alone controllers, PC COM ports, or multi-dropped electric meters.



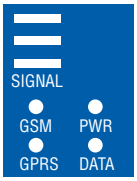
Remote Cabinet



Remote Cabinet

Signal LED Indicators

The OnCell G2150I provides several LED indicators for basic status information. At a glance, users can see the signal strength and the current mode of communication, such as CSD data or GPRS.

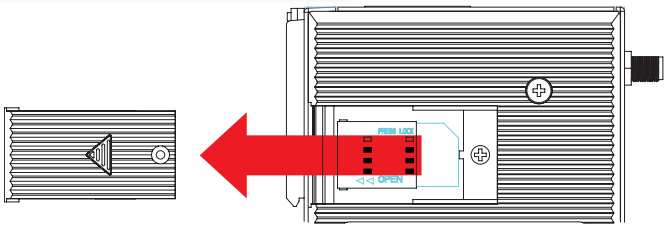


Type	Color	Description
SIGNAL	Green	Signal level (≧ L2 for data connection)
PWR	Green	Power activated
GSM	Amber	GSM CSD connection established
GPRS	Amber	GPRS connection established
DATA	Green	Serial Tx/Rx

Numbers of Signal LEDs	Type of signal that can be transmitted
None	No signal, or SIM card is not installed properly, or PIN is not entered
1LED	Weak or insufficient (SMS only)
2LEDs	Average (good for GSM CSD and GPRS connections)
3LEDs	Exceptional (good for GSM CSD and GPRS connections)

SIM Card Protection

For security purposes, the SIM card is installed within the OnCell G2150I housing. The outer cover must be unscrewed and removed for access to the SIM card slot. Moreover, if an OnCell G2150I is installed on a DIN-Rail or a wall, SIM Cover is not able to be opened from its housing easeily before removing it from the DIN-Rail..



Automatic PIN Entry

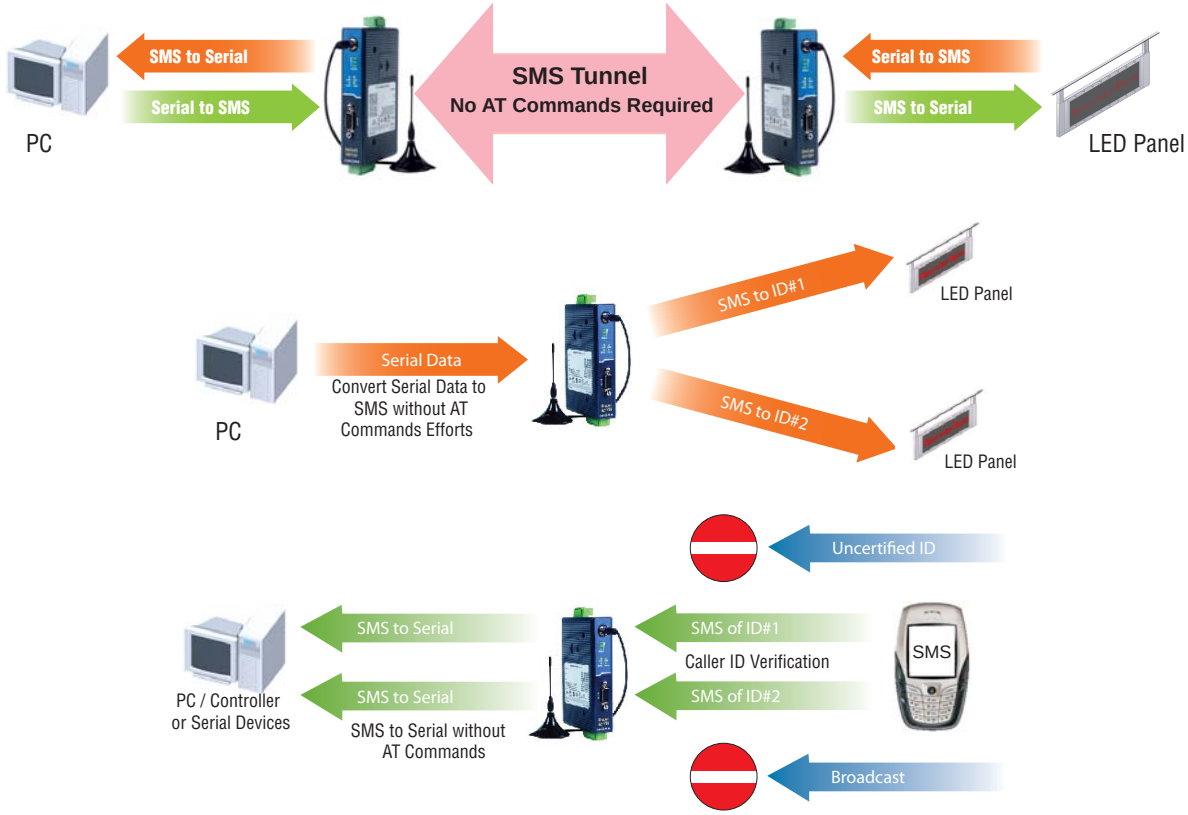
Once the correct PIN is entered with the AT+ CPIN command, or using OnCell Configurator, the system (firmware V1.2 or above) will activate the Automatic PIN Entry function. This function will store the current PIN in its memory and enter it into the OnCell G2150I each time the system boots up. If the SIM card does not match the current PIN, the Automatic PIN Entry function will be deactivated.

OnCell Configurator

OnCell Configurator is a PC-based software tool for managing and configuring OnCell G2150I modems. With a full graphics mode and Windows-based environment, even first time users will find it easy to learn how to use this new tool. OnCell Configurator can be used to configure the general phone settings and modes for auto dial-out parameters, but without the need to look up AT commands.

SMS Tunnel Mode

A major benefit of GSM technology is its support of short messages (SMS) for easy communication over the mobile network. With MOXA's SMS Tunnel Mode, applications can be expanded and extra costs eliminated. For example, SMS Tunnel Mode can be used to update the message on a highway display panel, place refill orders for vending machines, handle maintenance for remote rental equipment, or even help to create the SMS alarm by directly transforming the text, binary or unicode data from a legacy device to short messages without AT Commands. It is particularly suitable for devices which communicate infrequently or lack access to the local network. Although SMS Tunnel Mode converts both ASCII and binary data to short messages transparently back and forth, design of the Caller ID(phone number) Identification has been implemented to block the message sent from the uncertified users, system broadcast and those commercial SMS advertisement.



Ordering Information

G2150I: Industrial Quad-Band RS-232/422/485 Isolated GSM/GPRS Modem

G2110I: Industrial Quad-Band RS-232 Isolated GSM/GPRS Modem (available by reauest)

Package Checklist:

- OnCell G2150I or G2110 x 1
- ANT-CQB-O-0-3m: Omni 0dBi/10cm, magnetic SMA antenna, 3m
- Document and Software CD and Quick Installation Guide
- Power jack to TB Cable

Optional Accessories

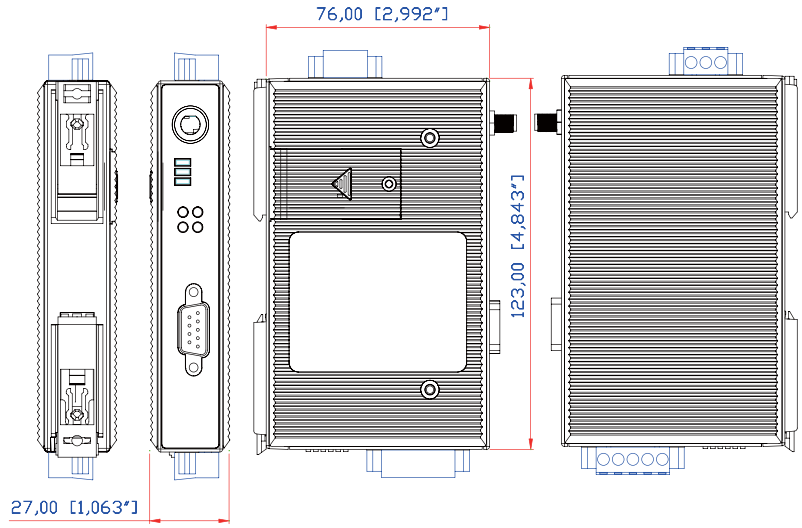
Power Adapter: 1.2A (or above) @ 12V, see page 12-8 for more detailed information

DC Power Supply: See page 12-7 for more detail information

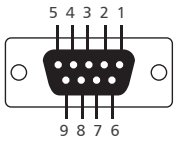
Antenna:

- ANT-CQB-O-3-3m: Omni 3dBi/25cm, magnetic SMA antenna, 3m
- ANT-CQB-O-5-3m: Omni 5dBi/37cm, magnetic SMA antenna, 3m
- ANT-CQB-O-1: Omni 1dBi rubber SMA antenna

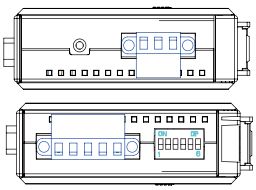
Dimensions (unit = mm)



DB9 (Female) RS-232 port



Pin	RS-232
1	DCD
2	TxD
3	RxD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS



Unit: mm

Specifications

Cellular Communication

Standard Compliance: GSM and GPRS

Band Selection: Quad-band 850/900 MHz, and 1800/1900 MHz

Tx Power: 1 watt GSM1800/1900, 2 watt EGSM 900/GSM 850

GPRS Multi-slot class: Class 10, Coding Schemes: CS1 to CS4

GPRS Terminal Device Class: Class B

CSD Data Transmission Rate: up to 14,400 bps

SMS: Point-to-point Text/PDU: Mobile Originated (MO) and Mobile Terminated (MT Cell Broadcast: in accordance with GSM 07.05)

SIM Control: 3V/1.8V interface

Antenna: Omni 0dBi/10cm, mini magnetic SMA, 3 meters

Serial Interface

Baud Rate: 300 bps to 115.2 Kbps

Data Bits: 7, 8

Stop Bits: 1, 2 (None parity)

Parity: None, Even, Odd, Space, Mark

RS-232 Connector: DB9 (Female)

RS-232 Signals: TxD, RxD, RTS, CTS, DTR, DSR, DCD and RI

RS-422/485 Connector: Terminal Block

RS-422/RS-485(4w) Signals: TxD+, TxD-, RxD+, RxD-, GND

RS-485(2w) Signals: Data+, Data-, GND

RS-422/485 Termination: 120 Ω (DIP switch)

RS-422/485 Pull High/Low: 150K/150K, 1K/1K (DIP switch)

Isolation: 2.5 KV RMS for 1 minute (All signals)

Power EFT/Surge Protection: 2 KV

Serial ESD Protection: 15 KV

Environment

Operating Temperature: -20 to 55°C

Storage Temperature: -40 to 75°C

Humidity: 5 to 95% RH

Power

Input Power Voltage: 12 to 48 VDC

Power Consumption:

- Idle: 50 mA @ 12 V
- Data Link: 300 ~ 900 mA (peak) @ 12V

Mechanical

Dimensions (W x D x H): 27 x 123 x 79 mm

Casing: ABS+PC, IP30 protected

Weight: 150 ±5g

Regulatory Approvals

CE, FCC Class A

Limited Warranty

5 years