

OnCell™ G2150I

Isolated Quad-Band 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
- > Separate RS-232 and RS-422/485 serial interfaces
- > 2.5 KV RMS isolation for 1 minute for all serial signals
- > 15 KV ESD surge protection
- > LED indicators for status, signal level
- > DIN-rail, wall mounting
- > SMS Tunnel Mode



⌚ 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

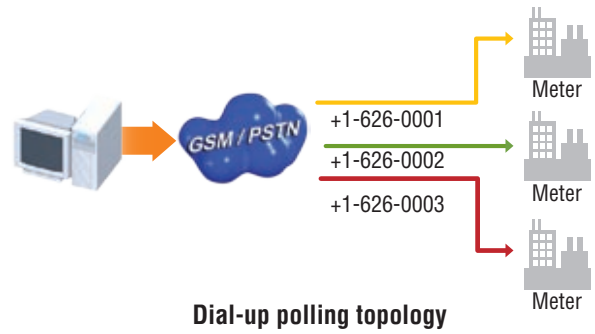
Modern wireless technology connects more than 2 billion cell phone users worldwide, using more than four times as many devices to manage connections. In different areas and countries, cellular operators offer different services. GSM is used almost everywhere, with upgraded service possible through GPRS 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 as follows.

Technology	Generation	Connection Type	Theoretical Max (kbps)	Carrier Max (kbps)	Typical Throughput (kbps)
GSM (kbps)	1G	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	3G	Packet	>1800	>1800	>700
UMTS(W-CDMA)	3G	Packet	384	384	200
CDMA	2G	Circuit	-----	14.4	-----
CDMA 1 x RTT	2.75G	Packet	307	153	60-80
1 x EVDO (CDMA2000)	3G	Circuit	>2000	>2000	300-500

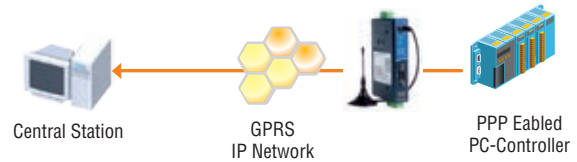
: CSD Data Connection

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.



: 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.



: G2150I Introduction

The OnCell G2150I is an isolated quad-band GSM/GPRS modem that transmits data and short messages (SMS) over GSM/GPRS mobile

networks. It can be used to improve the efficiency of maintenance and communication, independent of operating skill.

: Industrial Form Factor

The OnCell G2150I is housed in an IP30 enclosure that can 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 2 KV isolation, so the system is safe from ground loop currents.

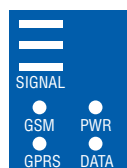
: Quad-band GSM/GPRS Communication

While GSM-900 and GSM-1800 are used in most parts of the world, GMS-850 and GSM-1900 are used by operators in the United States, Canada, and many other countries in the Americas. With quad-band cellular modems such as the OnCell G2150I, administrators do not have to go through the trouble of selecting different models for different parts of the world.



: 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.

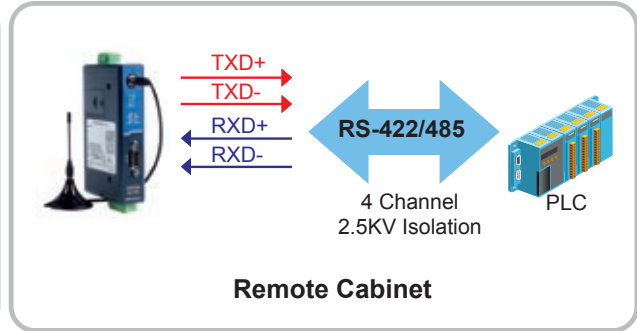
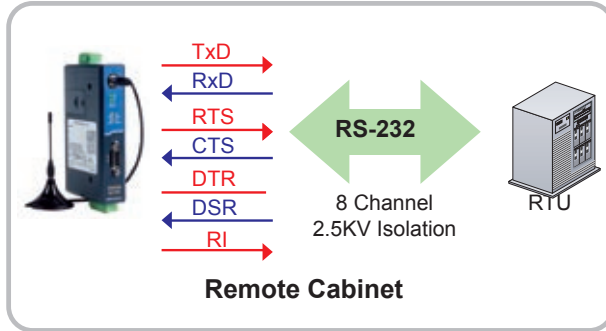


Type	Color	Description
SIGNAL	Green	Signal level (\geq L2 to establish connection)
PWR	Green	Power activated
GSM	Amber	GSM CSD connection established
GPRS	Amber	GPRS connection established
DATA	Green	Serial Tx/Rx

: Isolated RS-232/422/485 Connectivity

Separate RS-232 and RS-422/485 interfaces are built into the OnCell G2150I, each with 2.5 KV RMS isolation for one minute and 15 KV ESD surge protection. The two serial interfaces make the OnCell G2150I

ideal for attaching all kinds of devices, such as stand-alone controllers, PC COM ports, or multi-dropped electric meters.



: SMS Tunnel Mode (Preliminary)

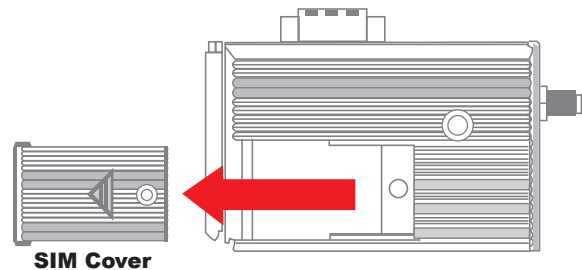
A major benefit of GSM technology is its support of short messages (SMS) for easy communication over the mobile network. With MOXA's SMS Tunnel Mode, applications can be expanded and extra costs eliminated. For example, SMS Tunnel Mode can be used to update the message on a highway display panel, place refill orders for vending machines, or even handle maintenance for remote rental equipment.

It is particularly suitable for devices which communicate infrequently or lack access to the local network. Moreover, SMS Tunnel Mode transparently converts both ASCII and binary data to short messages. The receiving OnCell G2150I unit automatically converts the short messages back to the original data.



: 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.



Ordering Information

G2150I: Isolated Quad-Band Industrial GSM/GPRS Modem

G2110: Quad-Band GSM/GPRS Modem for RS-232, available by request

Package Checklist: 0 dBi/10cm, mini magnetic SMA, 3 meters

Optional Accessories

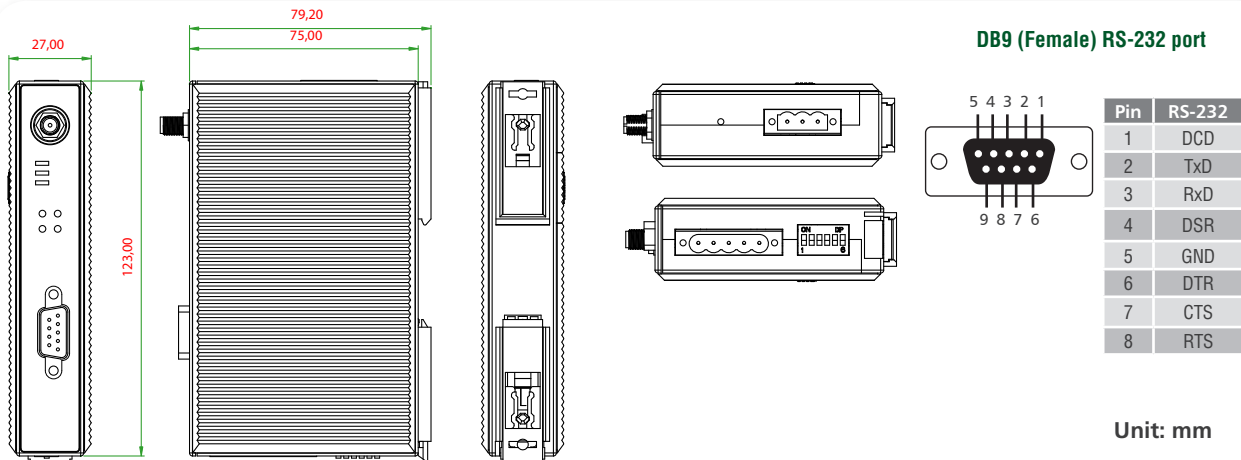
Power Adapter: 1.2A (or above) @ 12V, see page 12-8 for more detailed information

DC Power Supply: See page 12-8 for more detail information

High-gain Antenna: 3 dBi/25cm, mini magnetic SMA, 3 meters

High-gain Antenna: 5 dBi/37cm, magnetic mount SMA, 3 meters

Dimensions (unit = mm)



Specifications

Cellular Communication

GSM/GPRS Features:

- Quad-band GSM/GPRS radio communication
- GPRS Class10
- 1 watt GSM1800/1900, 2 wattt EGSM 900/ GSM 850

CSD Data Transmission Rate: up to 14,400 bps

SIM Control: 3V/1.8V interface

Antenna: 0 dBi/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: 2KV

Surge Protection: 15 KV ESD

Environment

Operating Temperature: 0 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: 200 ±5g

Regulatory Approvals

CE, FCC Class A

Limited Warranty

5 years