

MPC-214

Wireless Multi-Protocol Gateway



User Guide



Contents

1. Introduction	3
2. Operation description	3
3. Serial Port Interface options	3
4. Hardware Setup	4
4.1 Packing list	
4.2 Panel Layout	
4.3 SIM Card Installation	
4.4 Wiring	
4.4.1 RS-422 serial device	
4.4.2 RS-485, 4-wire serial devices	
4.4.3 RS-485, 2-wire serial devices	
5. Configuration	9
5.1 Serial port direction control	
5.2 Transmit Packet accumulation	
5.2.1 Packet length	
5.2.2 Packet length	
5.3 Receive Packet accumulation	
5.3.1 Packet length	
5.3.2 Packet length	
5.4 Serial Device Baud rate	
5.5 GSM Pin	
5.6 GPRS Connection Parameters	
5.7 TCP Server Address	
5.8 TCP Server Port	
5.9 Factory settings	
5.10 Save Configuration	
5.11 Unit Name	
5.12 Serial Port Baud Rate	
5.13 Starting Operation	
5.14 Unit Reset	
6. Specifications	11
7. Configuration Commands	12

Disclaimer

- While every effort has been made to ensure that the information in this guide is accurate and complete, no liability can be accepted for any errors or omissions.
- Infinite Ltd reserves the right to change the specifications of the hardware and software described in this guide at any time without prior notice.
- No part of this guide may be reproduced, transmitted, stored in fixed or removable media or translated into any language in any form without the prior written permission of Infinite Ltd.
- Infinite makes no warranties for damages resulting from corrupted or lost data due to malfunction of the hardware or the software.

Document version: 1.1

Hardware version: 1.0, Firmware version: 1.2

Copyright © 2014 – Infinite Informatics Ltd

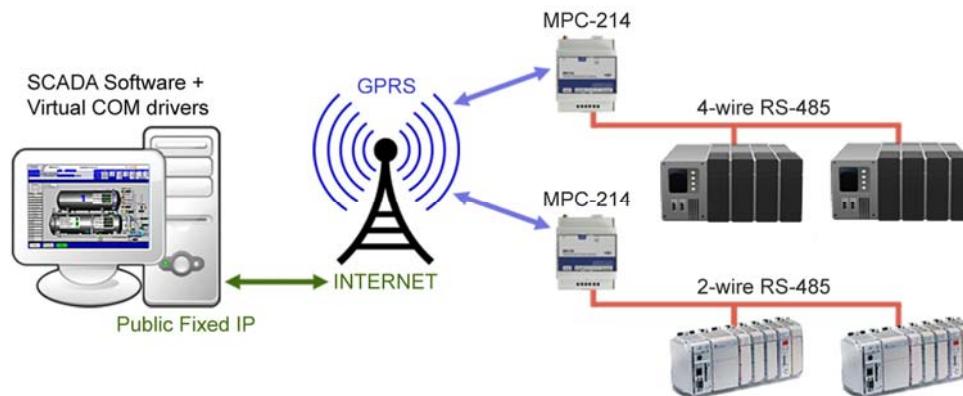
All rights reserved.

1. Introduction

MPC-214 is an intelligent serial to GPRS gateway for M2M applications. In combination with special drivers on a remote PC, it can establish a link between PC software and local serial devices over GPRS.

Legacy serial equipment can be connected over GSM/GPRS and the Internet to software systems with serial connectivity. MPC-214 can provide a protocol independent serial link to the attached serial device(s) over TCP/IP.

2. Operation description



Typical Application

MPC-214 connects at power up to a TCP port of a host (PC running Windows) with public IP. Virtual COM drivers combined with a TCP server on the PC, allow the use of application software that was written for pure serial communication (e.g. legacy SCADA system). The Virtual COM driver intercepts data sent from the application to the host's virtual COM port, packs it into a TCP/IP packet and redirects it to the connected MPC-214 through the Internet.

At the other end of the connection, the MPC-214 accepts the IP frame from the cellular network, unpacks the TCP/IP packet, and then transparently sends the data through the serial port to the attached serial device(s). Responses from the serial device(s) are packed from MPC-214 into TCP/IP packets and are sent to the TCP server, who redirects the incoming data through the virtual COM port to the application.

3. Serial Port Interface options

Serial Port Interface options include:

1. RS-232C, Unit Setup.
2. RS-422, single serial device (Operation).
3. 4 wire RS-485, multiple serial devices (Operation).
4. 2 wire RS-485, multiple serial devices (Operation).

4. Hardware Setup

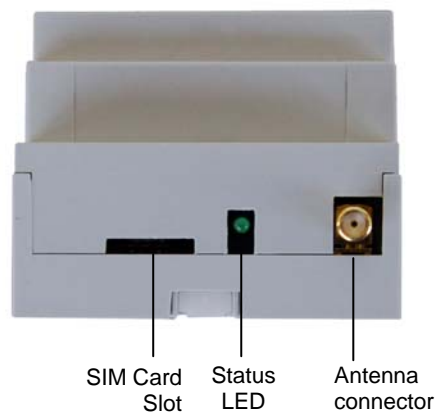
4.1 Packing list

1. MPC-214 unit
2. RS-232C serial cable (SCCM-09-MF)
3. Software CD

4.2 Panel Layout

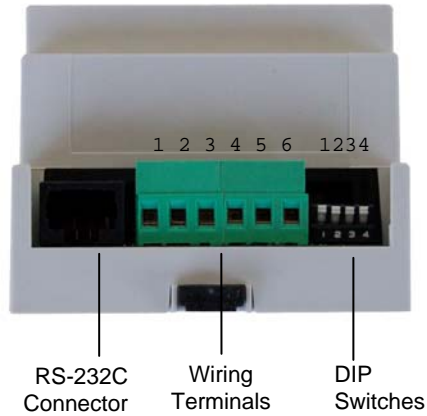


Front View



Top View

Status LED: Indicates connection to the GSM network (Blinking).



Bottom View

Wiring Terminals

Terminal	Signal	Description
1	VDC+	Power Supply
2	VDC-	Power Supply, GND
3	R+	RS422/RS485 (4 wire) Receive positive Terminal
4	R-	RS422/RS485 (4 wire) Receive negative Terminal
5	T/R+	RS422/RS485 (4 wire) Receive positive Terminal RS-485 (2 wire) bidirectional positive Terminal
6	T/R-	RS422/RS485 (4 wire) Receive negative Terminal RS-485 (2 wire) bidirectional negative Terminal

DIP switches

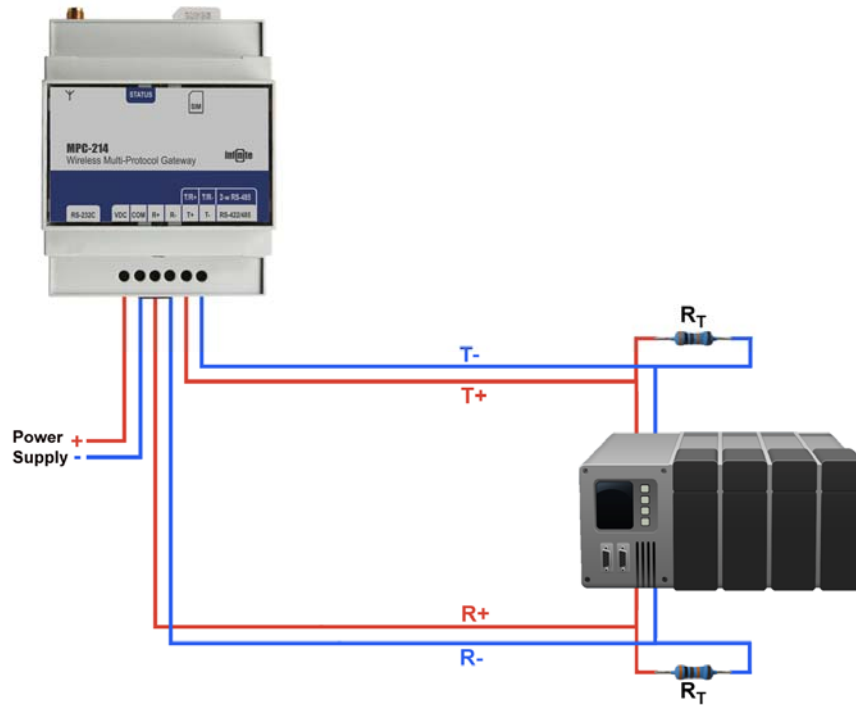
Switch	Function
1	R+ / R- Resistor Termination (ON → Termination)
2	T/R+ / T/R- Resistor Termination (ON → Termination)
3	ON → Unit Setup, OFF → Operation
4	Not used

4.3 SIM Card Installation



4.4 Wiring

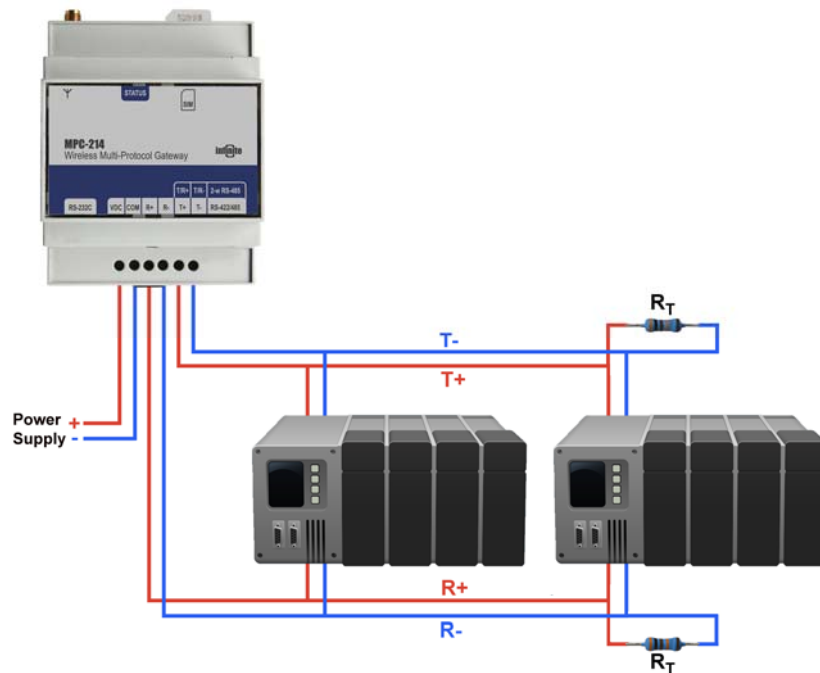
4.4.1 RS-422 serial device



RT: Optional Termination resistors (120R).

Set DIP switches 1,2 on MPC-214 to ON position for terminating the lines on the MPC-214 side (See 4.2).

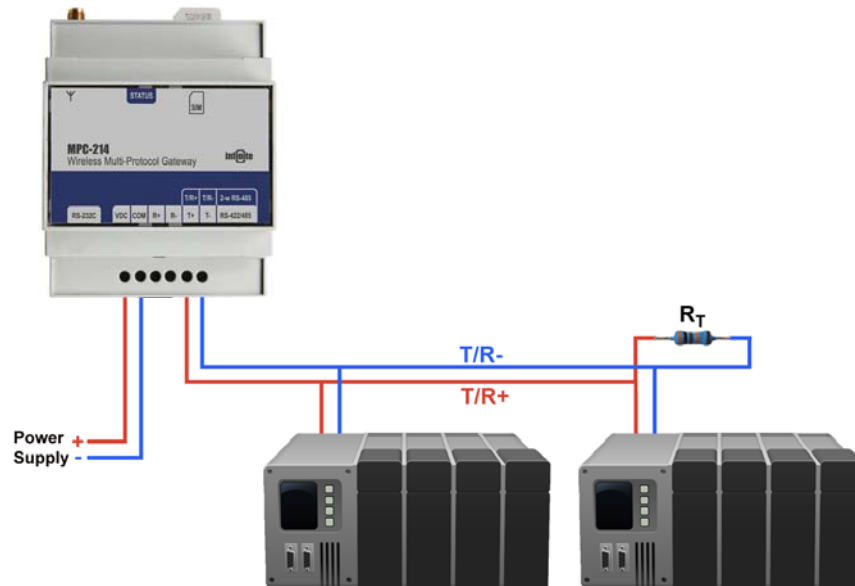
4.4.2 RS-485, 4-wire serial devices



RT: Optional Termination resistors (120R).

Set DIP switches 1,2 on MPC-214 to ON position for terminating the lines on the MPC-214 side (See 4.2).

4.4.3 RS-485, 2-wire serial devices



RT: Optional Termination resistors (120R).

Set DIP switches 1,2 on MPC-214 to ON position for terminating the lines on the MPC-214 side (See 4.2).

5. Configuration

MPC-214 employs simple ASCII configuration commands for unit setup. All setup commands can be passed using a terminal on the PC. Put DIP switch 3 at ON position and power up the unit, in order to enter the Setup mode (See 4.2).

Connect the unit to a PC and use a terminal program to pass the ASCII commands to the unit, according to the scheme:

atsms="ASCII command"

The terminal settings should be (Default settings):

- Baud rate: 115200 bps,
- Data bits: 8,
- Parity: none,
- Stop bits: 1,
- Flow control: None.

5.1 Serial port direction control

The command selects the mode for the direction control of the RS-485 port.

0315,n

0315: Command ID

n: Mode

n=0, No direction control (RS-422 or 4-wire RS-485)

n=1, Software direction control (2-wire RS-485)

n=2, Hardware direction control (2-wire RS-485)

➔ Select n=1 for serial device Baud rates ≤ 4800 bps.

➔ Select n=2 for serial device Baud rates ≥ 9600 bps.

5.2 Transmit Packet accumulation

The parameter defines the method for accumulating data (from the cellular network) before sending a packet to the serial device.

0320,m,t

0320: Command ID

m: Mode

m=0: Timeout

m=1: Fixed length

m=2: Terminating character

t: Timeout period [ms]

5.2.1 Packet length

The parameter defines the length of the transmit packet.

0321,l

0321: Command ID

l: Length, number of bytes

5.2.2 Terminating Character

The parameter defines the terminating character.

0322,c

0322: Command ID

c: Terminating character (ASCII code)

5.3 Receive Packet accumulation

The parameter defines the method for accumulating data (from the serial device) before sending a packet to the cellular network.

0330,m,t

0330: Command ID

m: Mode

m=0: Timeout

m=1: Fixed length

m=2: Terminating character

t: Timeout period [ms]

5.3.1 Packet length

The parameter defines the length of the receive packet.

0331,l

0331: Command ID

l: Length, number of bytes

5.3. Terminating Character

The parameter defines the terminating character.

0332,c

0332: Command ID

c: Terminating character (ASCII code)

5.4 Serial Device Baud rate

The parameter defines the Baud rate of the attached serial device(s). The setting is only for internal use. The Baud rate of the MPC-214 serial port must be set via AT commands (See 5.12).

0340,b

0340: Command ID

b: Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 115200, 230400, 460800, 921600

5.5 GSM Pin

The parameter defines the GSM Pin.

0783,p

0783: Command ID

p: GSM Pin

5.6 GPRS Connection Parameters

The parameter defines the parameters for the GPRS connection.

0810,u,p,a

0810: Command ID

u: User Name

p: Password

a: APN

5.7 TCP Server Address

The parameter defines the public address of the TCP server on the host.

0831,a

0831: Command ID
a: Public Internet Address

5.8 TCP Server Port

The parameter defines the port of the TCP server on the host.

0832,p
0832: Command ID
p: Port number

5.9 Factory settings

0183,0183
0183: Command ID
0183: Extra command argument

5.10 Save Configuration

The command saves the current configuration on non volatile memory.

0205,0205
0205: Command ID
0205: Extra command argument

5.11 Unit Name

You can specify a unit name for identification purposes.

0300,s
0300: Command ID
s: Device name (up to 15 characters)

5.12 Serial Port Baud Rate

→ The MPC-214 serial port must be set, via standard AT commands, to the actual serial device Baud rate (see 5.4) before starting operation.

AT+IPR=BR The command selects the Baud rate
BR: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 115200, 230400, 460800,
921600

AT&W The command saves the Baud rate setting
The new Baud rate takes after recycling power to MPC-214.

5.13 Starting Operation

Power down the MPC-214, put DIP-switch 3 at OFF position and reapply power to the unit. MPC-214 enters Operation Mode (See 4.2).

5.14 Unit Reset

The command resets the MPC-214 unit.

0171
0171: Command ID

6. Specifications

Power requirements Data Link	12..24 VDC, 26VDC max 335 to 600mA (peak) @ 12V
Temperature	-30°...65°C, operating
Serial port Number of ports Baud rate Data Bits Stop Bit(s) Parity Serial Standards Biasing resistors Termination resistors ESD Protection	1 300 to 921600 bps 7,8 1,2 None, Even, Odd, Space, Mark RS-232C, RS-422, RS-485 2 & 4 wire 620R (RS422/RS485 port) 120R (RS422/RS485 port) 15 kV
Indications	1 LED, GSM network status
GSM Modem Band Options GPRS Multi-slot Class GPRS Coding Schemes Tx Power SIM Control	GSM/GPRS, Sierra Wireless Q268x Quad band (850/900/1800/1900MHz) Class 10 CS1 to CS4 1 watt GSM 1800/1900, 2 watts EGSM 850/900 3V
Mounting	DIN Rail
Dimensions	130 x 130 x 75 mm
Weight	0.2 kg

7. Configuration Commands

Cmd	Description	Syntax	Comments
0171	Reset Unit	cmd	
0183	Set Factory Defaults	cmd,cmd	
0205	Save Parameters	cmd,cmd	
0300	Set Device Name	cmd,s	s: device name
0315	Serial port direction control	cmd,n	n: 0: No Control (RS422/4-w RS485), 1: Software, 2: Hardware
0320	Transmit Packet accumulation MPC-214 → Serial device	cmd,m,t	m: mode (0: timeout, 1: fixed length, 2: terminating character), t: timeout (msec)
0321	Set Transmit Packet Length	cmd,l	l: length
0322	Set Transmit Terminating Character	cmd,c	c: terminating character (ASCII code)
0330	Receive Packet accumulation Serial device → MPC-214	cmd,m,t	m: mode (0: timeout, 1: fixed length, 2: terminating character), t: timeout (msec)
0331	Set Receive Packet Length	cmd,l	l: length
0332	Set Receive Terminating Character	cmd,c	c: terminating character (ASCII code)
0340	Set Serial Device Baudrate	cmd,b	b: serial baudrate
0783	Set GSM PIN	cmd,p	p: GSM PIN
0810	Set GPRS Connection Parameters	cmd,u,p,a	u: username, p: password, a: APN
0831	Set Remote Link Server Address	cmd,a	a: address
0832	Set Remote Link Server Port	cmd,p	p: port
2000	Get Device Status	cmd	
2006	Get Device Software Version	cmd	
2008	Get Signal Quality	cmd	
2300	Get Device Name	cmd	
2315	Get serial port direction control	cmd	
2320	Get Transmit Packet accumulation	cmd	
2330	Get Receive Packet accumulation	cmd	
2340	Get Serial Device Baudrate	cmd	
2810	Get GPRS Connection Settings	cmd	
2830	Get Remote Link Server Settings	cmd	