

# GM-1005A-B

## RS-232/RS-422 Interface Converter User Manual

### I. Overview

For communication between PC with different standard serial port and external equipments or intelligent instruments, standard serial conversion is necessary. This converter is compatible with RS-232C, RS-422 standards. It converts RS-232 signals into balanced differential RS-422 signals. The transmission distance of RS-232 communication can be extended to 1.2km. It adopts unique RS-232 charge pump technology to drive the system, and gains power without initializing RS-232 serial port. This converter is with built-in zero delay auto receiving and transmitting conversion and unique I/O circuit auto control data flow direction without any handshake signal (RTS, DTR); this guarantees that there is no need to modify the programming under RS-232 full duplex mode, it will run smoothly under RS-422 mode, ensure to suitable for current software and hardware. The transmission rate is 300-115.2kbps. It can be used between hosts, host and SCM, which building a point to point, point to multipoint long-distance communication networking. It is widely applied in industrial automation control system, all-in-one card, access control system, parking system, ATM system, bus charging system, canteen ticketing system, attendance system, and toll station system, etc.

### II. Feature

- © Standards: RS-232C and RS-422 EIA/TIA
- © Connector: RS-232 DB9 female, RS-422 DB9 male
- © Working mode: asynchronism Full-duplex difference transmission
- © Transmission media: twisted -pair or STP
- © Transmission rate: 300-115.2Kbps
- © Dimension: 63mm × 33mm × 17mm
- © Working environment: -25 to 70°C, relative humidity 5% to 95%
- © Transmission distance: 1,200m (RS-422 end), 5m(RS-232 end)

### III. Connector an signal

RS-232C Pin assignment

DB9 female(PIN)	RS-232C Signal
1	DCD
2	RXD SIN
3	TXD SOUT
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	Ri

RS-422 Pin assignment

DB9 male(PIN)	Data output	RS-422 full-duplex
1	T/R+	T(A+)
2	T/R-	T(B-)
3	RXD+	R(A+)
4	RXD-	R(B-)
5	GND	GND
6	VCC	+5V

### IV. Hardware installation & application

This converter adopts DB9 to DB9 connector, with terminal block output. It is convenient to connect with twisted pair or STP, easy for installation. T/R+ & T/R- stands for transmitting A+ & B-; RXD+ & RXD- stands for receiving A+ & B-; VCC stands for standby power; GND stands for public ground wire. For point to point or point to multi-point mode, it uses 4 wires for connection under full-duplex.

GM-1005A-B supports 2 communication modes as below

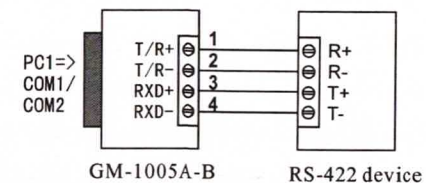
1. point-to-point 4 wires Full-duplex
2. Point-to-multipoint 4 wires Full-duplex

When converter works under Full-duplex connection, it needs to install a matching resistance (data 120 ohm 1/4W) for preventing signal reflection and interference.

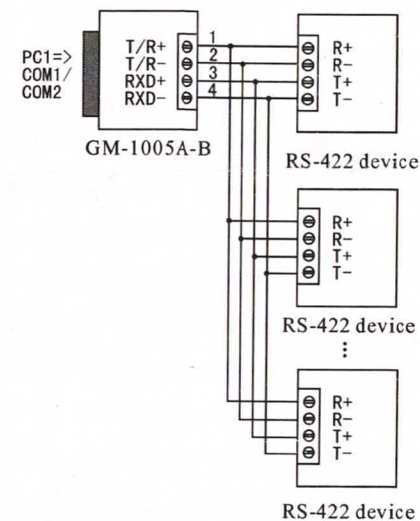
### V. Communication sketch map

RS-232 to RS-422 conversion

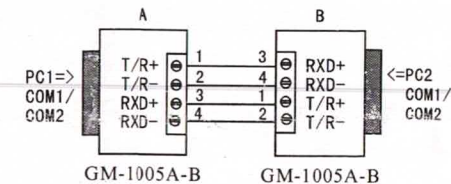
#### 1. RS-422 point-to-point 4 wires Full-duplex



#### 2. RS-422 point-to-multipoint 4 wires Full-duplex



#### 3. GM-1005A-B Full-duplex communication connect between interface converter



### VI. Problem and resolution

1. data communication failure
  - A. Check if RS-232 interface connection is correct
  - B. Check if RS-422 output connection is correct
  - C. Check if connection ends are well connected
2. Data loss or mistake
  - A. Check if data rate and format is consistent on both communication end.