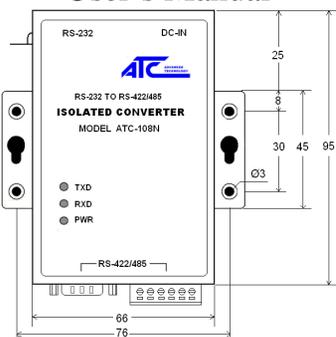


GC-ATC-108N RS-232/RS-422/RS-485 Industrial Wall-mounted Photoelectric Isolation Interface Converter User's Manual



1.0 General introduction

GC-ATC-108N Photoelectric Isolation Interface Converter is compatible with RS-232C, RS-422, RS-485 standards and capable of converting single end RS-232 signal into RS-422 or RS-485 signal of balanced difference. The built in photoelectric isolator can offer 3500V isolation voltage and the grade 2 rapid Transient Voltage Suppressor (TVS) can effectively inhibit lightning and ESD, provide 1000W lightning strike and surge protection power on each line and prevent lightning strike and common code interference. Connect PC, IPC, or portable computer via a DB9 female connector at RS-232 interface, and connect RS-422, RS-485 end via convenient 6-bit plug-in terminal. The RS-485 supports dual-line half duplex, namely, the only two lines of RS-485 shall both send and receive data. Handshake signal (e.g. RTS, Request To Send) usually controls the data direction. The inner circuit of GC-ATC-108N Photoelectric Isolation Interface Converter can detect data direction and switch to control it automatically, conveniently to form a RS-485 network without any shake hand signal. This kind of RS-485 control is fully transparent and need no software amendment for the former working modes basing on RS-232.

GC-ATC-108N Photoelectric Isolation Interface Converter can provide credible connection for point to point, point to multi-point communication. The point to multi-point allows connecting 128 RS-422 or RS-485 interface devices with data transmission speed of 0-115.2KBPS. The 3 power supply and data flow indication light can indicate malfunction. It supports communication modes including RS-232C to RS-422, RS-232 to RS-485 conversion.

2.0 Performance parameter

2.1 Interface feature

The interface is compatible with EIA/TIA RS-232C, RS-485/RS-422 standard

2.2 Electric interface

RS-232C interface RJ-45 connector DB9 cable
RS-422/RS-485 DB9 interface or 6-bit terminal

2.3 Transmission media

Twisted-pair cable or shielded cable

2.4 Operation mode

Asynchronous half or full duplex

2.5 Signal indication

3 signal indication lights indicate TXD, RXD and PWR

2.6 Isolation

Isolation voltage 3500VRMS 500VDC sequence

2.7 Transmission speed

115.2K BPS to 1.2KM
38.4K BPS to 2.4KM
600 BPS to 5KM

2.8 Protecting grade

RS-232 interface:

600W lightning strike and surge protection on each line

RS-422, RS-485 interface:

1000W lightning strike and surge protection on each line

2.9 Transmission distance

0-5 kilometers (115200-600BPS)

2.10 Size

95mmx85mmx26mm

2.11 Working environment:

-25°C to 70°C

5% to 95% relative humidity

3.0 Connector and signal

RS-232 DB9 Female Connector Pinout

DB9 Female	RS-232
PIN2	TXD
PIN3	RXD
PIN5	GND

RS-422/485 Pinout: (6-bit terminal from the left to right)

Terminal No	1	2	3	4	5	6
RS-422	T+	T-	R+	R-	VIN	GND
RS-485	485+	485-	-	-	VIN	GND

RS-422/485 Pinout: (DB9 male connector)

DB9 PIN	RS-422	RS-485
PIN1	T-	485-
PIN2	T+	485+
PIN3	R+	-
PIN4	R-	-
PIN5	Protection GND	Protection GND

4.0 Installation setup and application:

Connect the communication cable of the product with RS-232C interface according to the DB9 Female Connector Pinout in section 3.0. Connect the RS-422/485 end with RS-422 or RS-485 device according to the RS-422/485 Pinout in section 3.0. Connect the power adapter with DC-IN socket. Since the inner conversions of the GC-ATC-108N are self-adapting, there is no user setting necessary for RS-232 to RS-422/485 conversion.

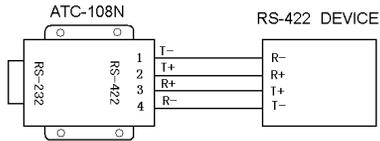
The GC-ATC-108N interface converter supports following 4 communication modes:

1. point to point/4 wire full duplex
2. point to multi-point/4 wire full duplex
3. point to point/dual-line half duplex
4. point to multi-point/ dual-line half duplex

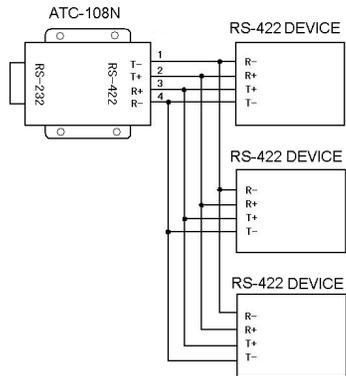
5.0 Sketch map for communication connection

RS-232 to RS-422 conversion

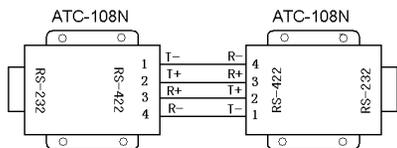
5.1 RS-422 point to point/4 wire full duplex communication



5.2. RS-422 point to multi-point/4 wire full duplex

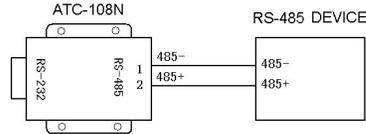


5.3. Full duplex communication connection between GC-ATC-108N interface converters

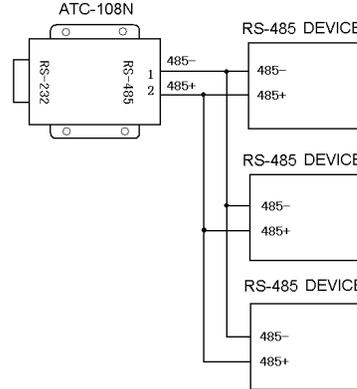


RS-232 to RS-485 conversion

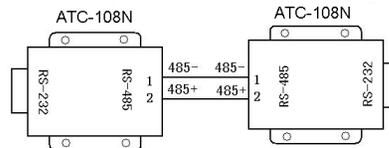
5.4 RS-485 point to point/ dual-line half duplex



5.5 RS-485 point to multi-point /dual-line half duplex



5.6 Half duplex communication connection between GC-ATC-108N interface converters



6.0. Power and surge grounding protection

External power supply:

The inner power supply of the GC-ATC-108N powers both the RS-232 and RS-422/485 sides. It can adopt the product's 9V power adapter for power supply or adopt power from other DC power sources or devices. The power supply voltage ranges from +9V to +24V with a 200mA current. It cannot share a common ground with RS-232 interface to avoid affecting its photoelectric isolation inside.

Surge grounding protection:

Transient high voltage induced in the interface's data lines tries to release energy to the ground wire via the least resistant path. This can easily cause damage to interface parts. The GC-ATC-107N can provide 1000W lightning strike and surge protection on each line. The rapid Transient Voltage Suppressor (TVS) can effectively inhibit lightning and ESD. The GC-ATC-107N interface converter DB9 pin PIN5 is designed for surge grounding protection. The user should try to avoid hanging by credible ground to ensure the safety of communication during operation.

7.0 Trouble shooting

7.1 Data transmission failure

- Check to make sure the RS-232 interface is correctly connected
- Check to make sure the RS-422/RS-485 interface is correctly connected
- Check to make sure the power supply voltage and polarity are correct

7.2 Data loss or error

- Check the consistency of the data speeds and formats at the both ends of the data communication device.



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