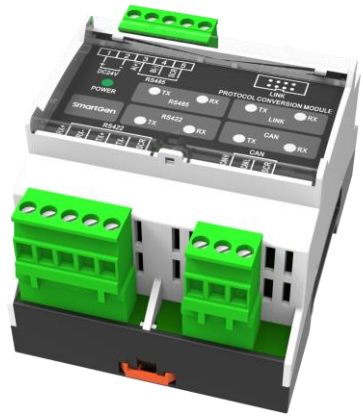
SmartGen

MAKING CONTROL SMARTER

SG81/SG81Z

PROTOCOL CONVERSION MODULE

USER MANUAL



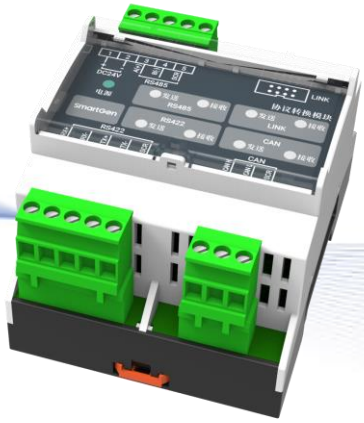


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Table 1 Software Version

Date	Version	Note
2015-03-30	V1.0	Original release.
2015-11-21	V1.1	Modify terminal descriptions.
2025-06-26	V1.2	Add SG81Z.
2025-09-04	V1.3	Modify the description of the RS422 and LINK terminal interfaces.

Table 2 Notation Clarification

Sign	Instruction
 NOTE	Highlights an essential element of a procedure to ensure correctness.
 CAUTION!	Indicates a procedure or practice, which, if not strictly observed, could result in damage or destruction of equipment.
 WARNING!	Indicates a procedure or practice, which could result in injury to personnel or loss of life if not followed correctly.

CONTENTS

1 OVERVIEW

SG81/SG81Z is a protocol conversion module, which has 4 interfaces, namely RS485 interface LINK interface, RS422 interface and CAN interface. Any two interfaces can be converted to each other (under protocol support, users can choose according to actual needs, RS485 interface and CAN interface are used for communication by default).

2 PERFORMANCE AND CHARACTERISTICS

Its main characteristics are as follows:

- With 32-bit ARM SCM, high hardware integration, improved reliability;
- DC(8~35)V wide power supply;
- 35mm guide rail installation method;
- Modular design and pluggable connection terminals; compact structure with easy mounting.

3 SPECIFICATION

Table 3 Performance Parameters

Items	Contents
Working Voltage	DC8V~DC35V continuous power supply, DC reverse connection protection
Overall Power Consumption	<1W (Standby: ≤0.6W)
CAN Interface	Isolation, max communication distance can reach 250m, using Belden 9841 cable or equivalent
RS485 Interface	Isolation, half-duplex, 9600 baud rate, max communication distance can reach 1000m
Vibration	5Hz~8Hz: displacement=±7.5mm 8Hz~500Hz: a=±2g IEC 60068-2-6
Shock	50g, 11ms, half-sine, complete shock test from three directions, and 18 times shock for each test IEC 60068-2-27
Bump	20g, 16ms, half-sine IEC 60255-21-2
Case Dimension	71.6mm*89.7mm*60.7mm(L*W*H)
Working Temperature	SG81 (-25~+70)°C; SG81Z (-40~+70)°C
Working Humidity	SG81 (20~93)%; SG81Z (20~95)%
Storage Temperature	SG81 (-25~+70)°C; SG81Z (-40~+80)°C
Insulation Strength	Apply DC0.5KV between high-voltage terminal and low-voltage terminal for 1min. During the test, there was no breakdown, no flashover, and no flying arc. Leakage current ≤3.5mA.
Weight	0.16kg

4 WIRING

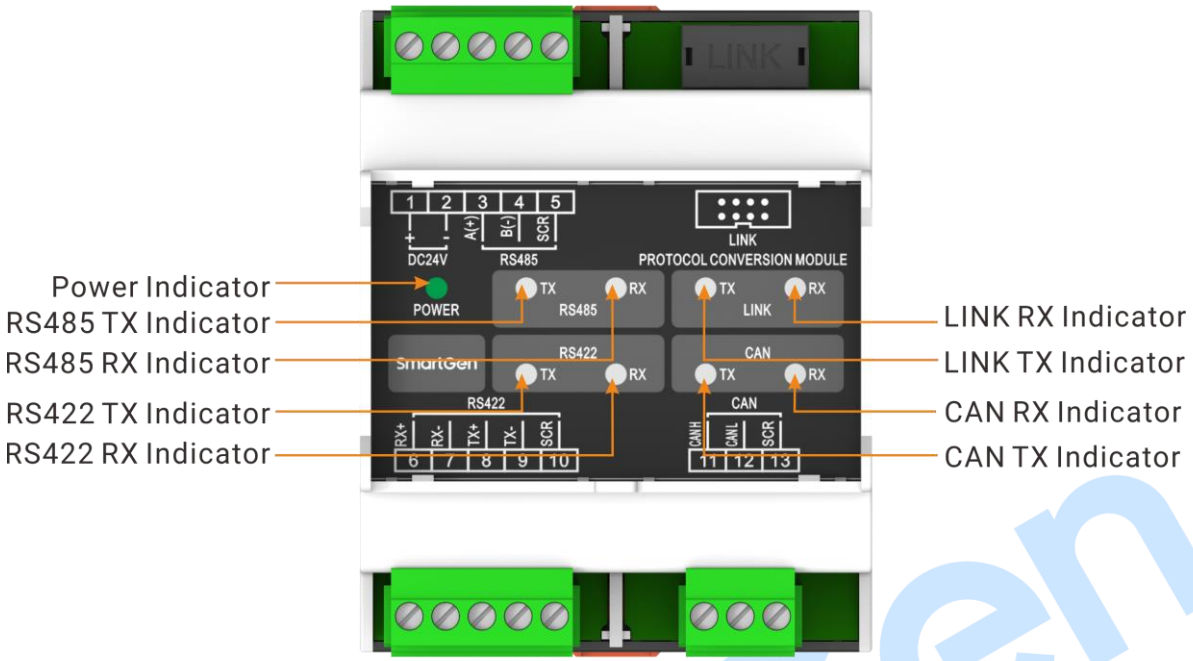

Fig.1 SG81 Panel Diagram

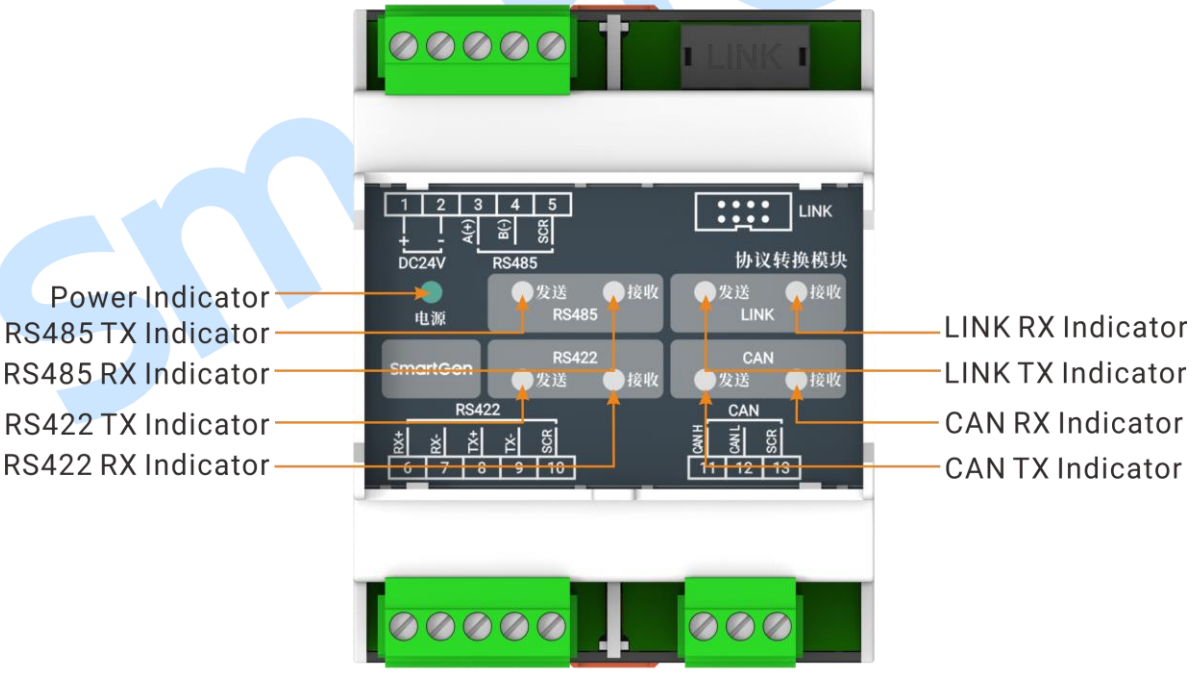

Fig.2 SG81Z Panel Diagram

NOTE: Indicator description.

NOTE1: Power indicator: it is always illuminated after power on.

NOTE2: TX and RX indicators: when there is data communication, the corresponding indicator of RS485, LINK, RS422 and CAN will flash, and extinguish when there is no data.

Table 4 Wiring Terminals Description

No.	Function		Cable Size	Remark
1.	B+		1.5mm²	DC power positive. It can directly use engine starting battery.
2.	B-		1.5mm²	DC power negative. It can directly use engine starting battery.
3.	RS485	A(+)	0.5mm²	Connect to RS485 port of master controller's communication. 120Ω shielded wire is recommended to use with single end grounded.
4.		B(-)	0.5mm²	
5.		TR	0.5mm²	
	LINK		0.5mm²	The interface is reserved and requires a custom order. If needed, a 120Ω shielded wire is recommended to use with single end grounded.
6.	RS422	RX+	0.5mm²	The interface is reserved and requires a custom order. If needed, a 120Ω shielded wire is recommended to use with single end grounded.
7.		RX-	0.5mm²	
8.		TX+	0.5mm²	
9.		TX-	0.5mm²	
10.		SCR	0.5mm²	
11.	CAN(H)		0.5mm²	Connect to CANBUS port of user controller's communication. 120Ω shielded wire is recommended to use with single end grounded.
12.	CAN(L)		0.5mm²	
13.	SCR		0.5mm²	

5 ELECTRICAL CONNECTION DIAGRAM

Since any two ports in this module can communicate with each other, the followings are two commonly used connection examples (other connection methods are similar, and users can choose by themselves.)

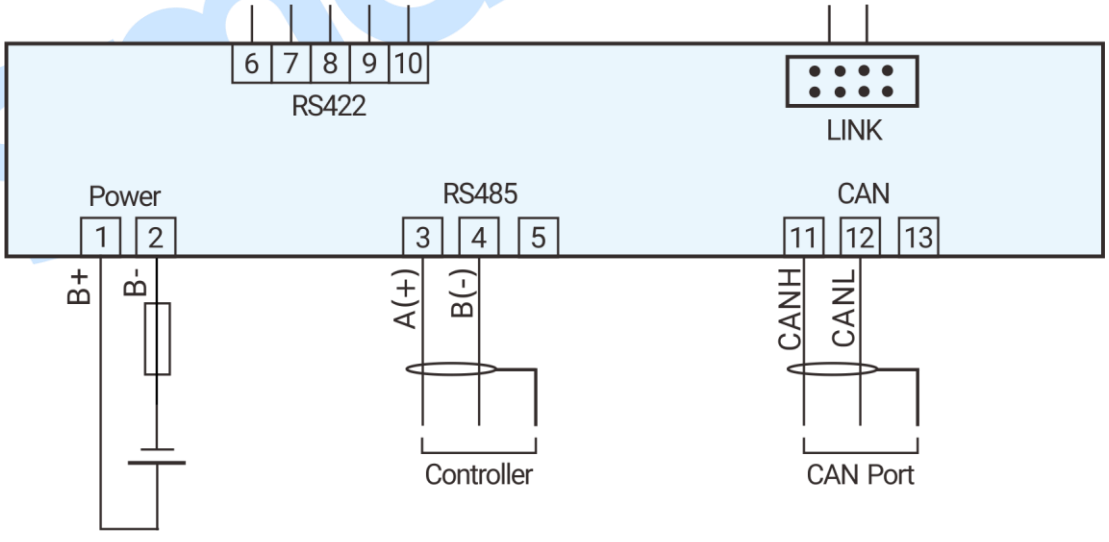

Fig.3 Electrical Connection Diagram

6 INSTALLATION

Unit: mm

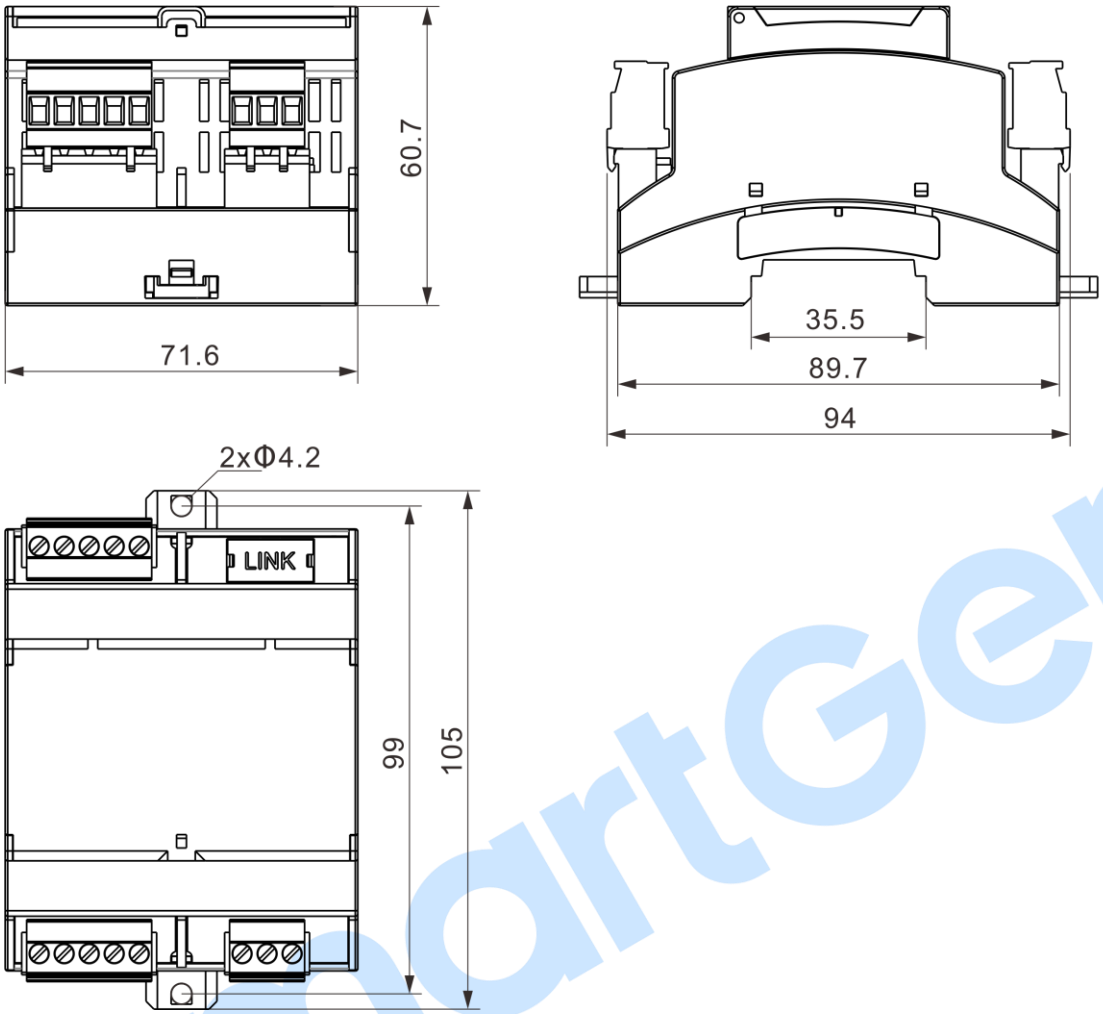

Fig.4 Overall and Cutout Dimensions