



## CAN-TTLG

### SCM light-isolated ultra-long-range driver

SCM system has been widely used in various industries, its interface (TTL level, TXD, RXD, GND,) usually use RS485 or RS422 interfaces to achieve long-distance communications. The communication distance is 1.2 km only. (DE) is needed for network. The CAN-TTLG light-isolated ultra-long-range driver which is developed by Fourstar completely solve the problems above. We use the CAN (Controller Area Network) bus technology which does not change the UART communication protocol to extend the SCM's communication distance to 10 km, can ensure it suits for all the RS232/RS485 software without changing the original software.

**Technical details:**

- 1, optical isolated voltage: 1000 VDC (up to 3000 VDC, a statement is required when ordering)
- 2, Power: external 5 V, 1W DC power supply
- 3, communication distance: 10 km (4800bps), 5km (9600bps), 2km (38400bps), 600m (115200bps)
- 4, communication rate: a maximum 230 kbps, the rate is automatically adaptive without setting
- 5, communication protocol: Using half-duplex CAN bus without change the original UART protocol (software)
- 6, the network nodes: can compose the multi-machine communication network with 110 nodes
- 7, transmission lines: twisted pair witch is 0.75 mm<sup>2</sup> above, the cross-sectional area of twisted pair should be more than 1.5 mm<sup>2</sup> and the capacitance between line should be less than 60 pf / m when the length of lines are more than 1km
- 8, interface protection:  
CAN port: Anti-lightning and anti-surge protection, repeatability surge capacity: I<sub>pp</sub> = 100A (10/700us, 4KV)  
standards: ITU-TK20/21, VDE 0433.  
RS232 port: 齐纳管 surge protection.  
Power port: 500 W TVS anti-lightning protection, anti-polarity of power protection.
- 9, Dimensions: 85 × 55 × 25
- 10, installation: installation of 35 mm standard rail and bolt hole

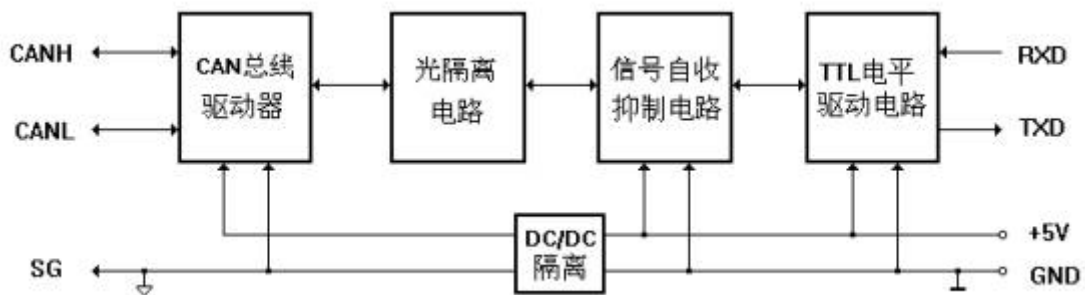
11, Weight: 100g

12, the working temperature: -20 ~ 75 °C

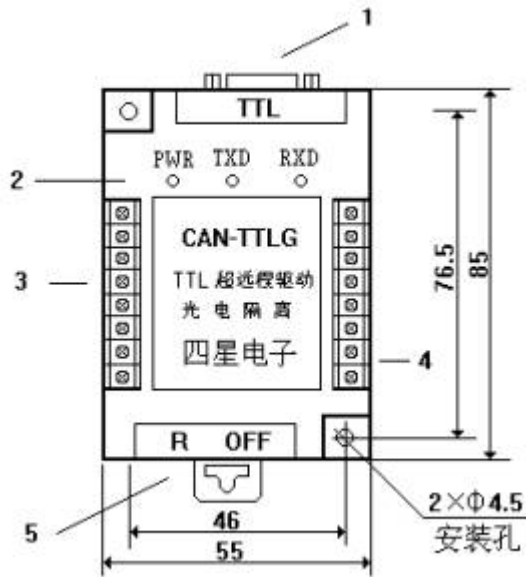
13, the humidity: 0 to 90%

**How it works :**

As shown, SCM's TXD (send data, TTL level) and RXD (receive data, TTL level) signals make circuit into shape and drive through TTL-level. the equipment will not receive the signal witch is sent by its own and the CAN signal witch is output by CAN bus driver after photoelectric isolation. The working power of this product can be provided by the equipment or obtained separately from external. Isolated power modules are used in the internal of the product,



**Products' shape and definition of terminal signals:**



- 1、TTL接口插座，DB9M
- 2、指示灯，PWR：电源，TXD：发送数据，RXD：接收数据
- 3、CAN总线接线端子
- 4、电源接线端子
- 5、终端电阻设置开关K  
“R”：接入120欧终端电阻  
“OFF”：不接终端电阻

CAN terminal (left)		Power terminal (right)	
Signal-name	description	Signal-name	description
CANH	CAN high		Not be used
CANL	CAN low		Not be used
CANH	CAN high		Not be used
CANL	CAN low		Not be used
SG	Signal ground		Not be used
FG	Shield ground		Not be used
	Not be used	+5V	External connect 5V power

			supply anode
	Not be used	GND	Power ground

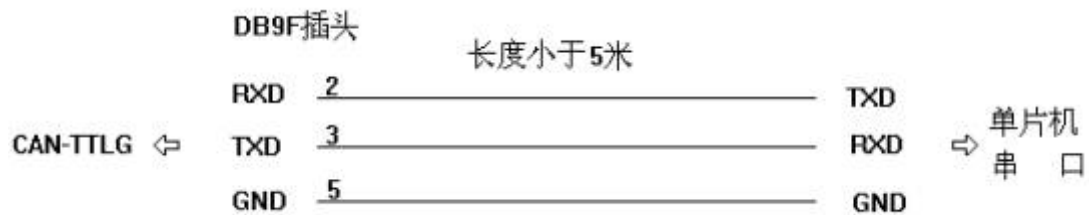
Stitch number	Signal-name	description
1	+5V	External connect 5V power supply anode
2	RXD	TTL signal receive
3	TXD	TTL signal send
4	Not be used	Not be used
5	GND	TTL signal ground (power ground)
6	Not be used	Not be used
7	Not be used	Not be used
8	Not be used	Not be used
9	Not be used	Not be used

Description: The two pairs of CANH and CANL terminal is to facilitate the connection with bus in networking. This product has provided two optional external power-input channels. The power terminals and connecting the 1-pin and 5-pin of TTL socket to 5V Power both work. They are very convenient for some TTL mouth witch is with 5V power-supply equipment (such as PLC).

The TTL signal of this product is the positive logic signal, the level compatible with 5V and 3.3V level.

The link of CAN-TTLG and SCM's serial communication mouth:

Connect send with receive, receive with sent, ground with ground.



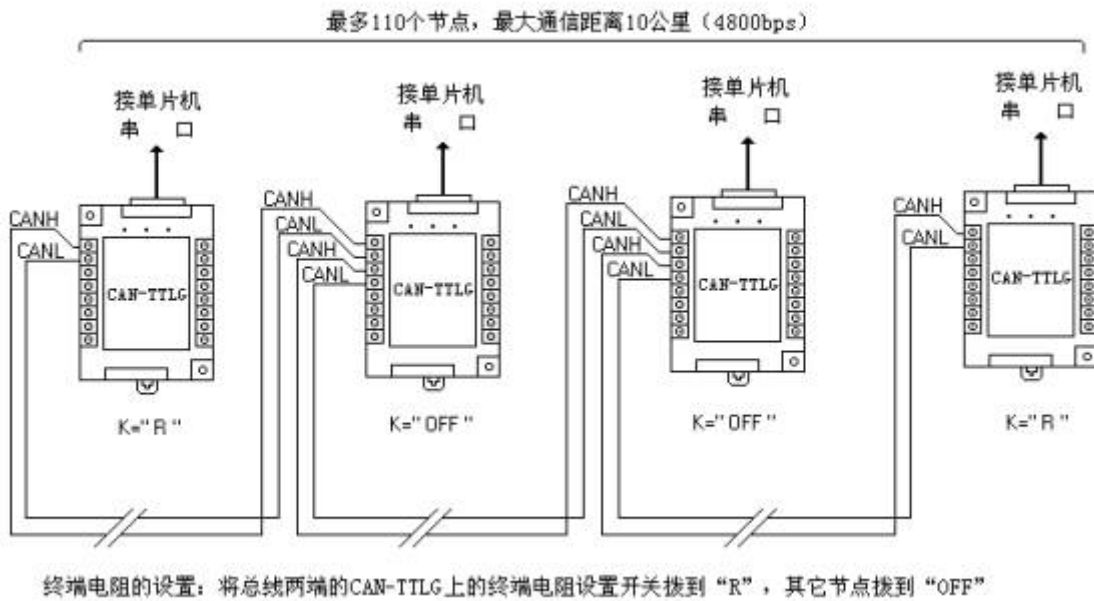
**How to use:**

1, SCM point-to-point communications:



## 2, SCM multi-machine communication

CAN-TTLG can realize the multi-machine communication network witch is composed of 110 SCM nodes; the largest communication range is 10 km (4800bps). The address of each node is determined by the procedures in the equipment.



**Notes:**

1, The cut-off size of communication lines is often overlooked by the users. Because the CAN receiver's effective level (0.8 V) is higher than the RS485 receiver's (0.2 V), the requirement of communication lines' cross-sectional area is high. And farther the communication distance is, the greater the cross-sectional area should be. The twisted pair best be the one whose impedance is 120 Europe, and the capacitance between line is less than 60 pf / m. The following table is the twisted pair's minimum cross-sectional area of different communication distance:

Communication distance(km)	2	5	10
Cross-sectional	1.0	1.5	2.0



area of twisted pair (mm <sup>2</sup> )			
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These are the cross-sectional areas of communication lines which are required by the Fourstar's CAN interface product with unique driven-enhanced circuit. The communications lines' cross-sectional area may be doubled from the table values as for other companies' CAN interface products.

2, When use shielded twisted pair, please connect the shield to the "FG" terminal of CAN-TTLG, and to land finally

3, The cable's length of CAN-TTLG to bus(extension) cannot be more than 15 m, otherwise they will have echoes, affecting the normal communication of system. Of course, there will be no extension problem if you use two pairs of CANH, CANL video for connection as the map showing.

4, For the setting of terminal resistance, the role of terminal resistance is to eliminate the waveform distortion caused by the reflection of signal in the communication lines. Please turn the termination resistor setting switch K which is on the CAN-TTLG of the communication line's terminal and set to "R" (connect 120Ω terminal resistance), the terminal resistance setting switch K of other CAN-TTLG to "OFF" (terminal resistance is unacceptable).

5, The second-line half-duplex communication way is used in this product, the address of node is determined by the equipment's memory. The programming method is completely same with second-line half-duplex RS485. CAN bus controller agreement is not used.

6, This product support positive logic TTL communication interface, that is HIGH (+5V) is logic "1", low (0V) is logic "0". If the equipment is negative logic TTL communications interface, you should tell us when ordering.