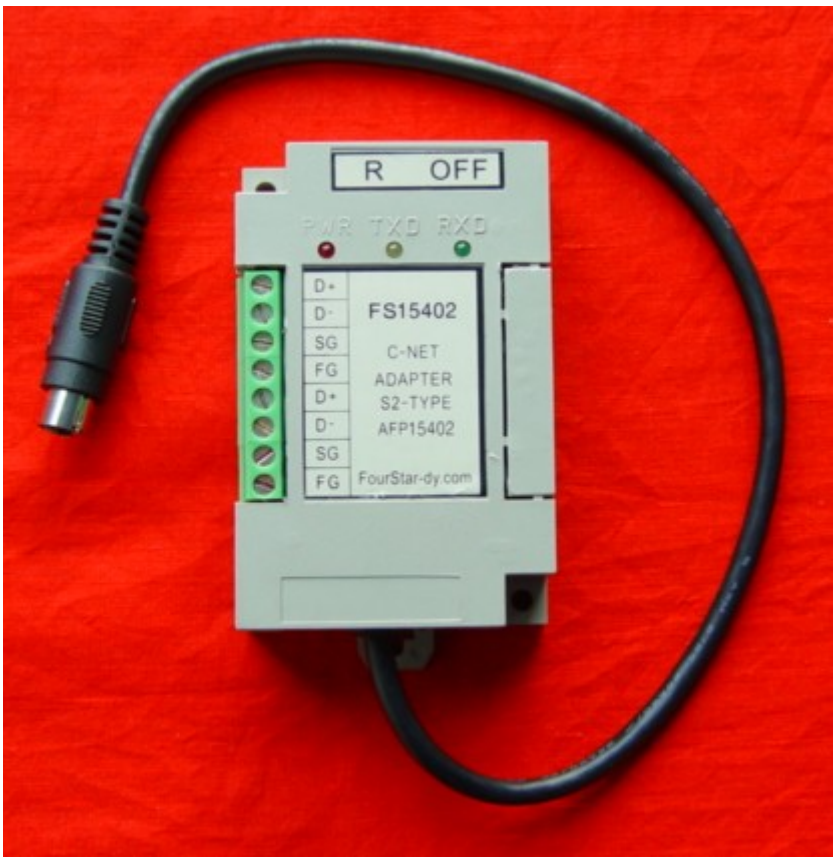


FS15402 C-NET Adapter Manual

FS15402 is a C-NET TYPE-S2 adapter designed for Panasonic PLC by Fourstar. With the RS232/RS485 conversion modules dedicated by Panasonic PLC, suit for Panasonic FP0/FP2/FP-M series PLC. It is used to make PLC form multi-point RS485 communications network and realize long-distance communication, having features such as high-speed optoelectronic isolation, anti-static, anti-lightning strikes, the extension of communication distance and so on. Using this product will greatly enhance the anti-jamming function, reliability and safety performance of communication systems, the RS485 network system particularly; completely solve the problems that the interface is easy to be damaged.

This product is fully compatible with Panasonic products AFP15402 TYPE-S2, and the performance has improved, the main differences between the two are as follows:

Technique data	Panasonic AFP15402	Fourstar FS15402
Communication rate	0～115.2Kbps adaptive	0～250Kbps adaptive
Greatest communication distance（when 9.6Kbps）	1km	2km
Anti-static protection	No exist	exist，±15KV
Anti-lighting protection	No exist	exist，600W
RS485 connection end	One group	Two group（convenient for connection）

Technical details:

1. Power: 5 VDC, 1W, supplied by the PLC communication interface, needn't to additionally connect.

2. Largest communication distance: 3km (4800 bps), 2km(9600 bps), 1km(115.2 Kbps)

3. communication rate: 0 ~ 250 kbps, baud rate adaptive

4. 32 FS15402 can be linked to bus

5. Can withstand the transient over-voltage whose power is up to 600 W, anti-lightning and have protection of ± 15KV electrostatic discharge impact

6. Receiver input open-fault protection, a thermal shutdown feature

7. The unique two groups of RS485 pin, facilitate network connection, avoid the echo problems caused by RS485 extension

8. Isolated voltage: 1000VDC (up to 3000 VDC, statement is required when ordering)

9. Temperature: -20 ~ 75 ℃

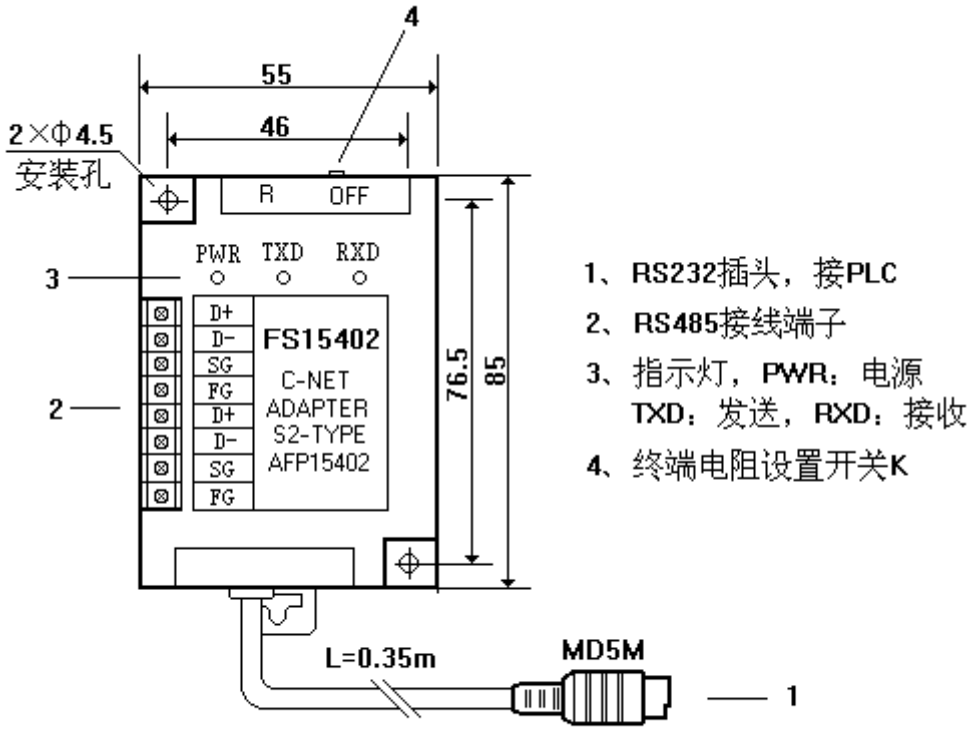
10. Weight: 100 g

11. Dimensions: 85 × 55 × 25

12. Installation: installation of 35 mm standard rail and the bolt hole

Products shape and definition of terminal signals:

The input end of FS15402 is MD5M plug. Directly plug into the programming communication interfaces of PLC such as Panasonic FP0/FP2/FP-M. RS485 end is two same groups of connection terminals, this design is to facilitate the connection of several FS15402, avoid signal distortion caused by the echo of RS485 extension.



Signal definition of RS485 connection terminal

Signal-name	description
D+	RS485 signal is positive
D-	RS485 signal is negative
SG	RS485 signal ground
FG	Shielding ground（chassis ground）
D+	RS485 signal is positive
D-	RS485 signal is negative
SG	RS485 signal ground
FG	Shielding ground（chassis ground）

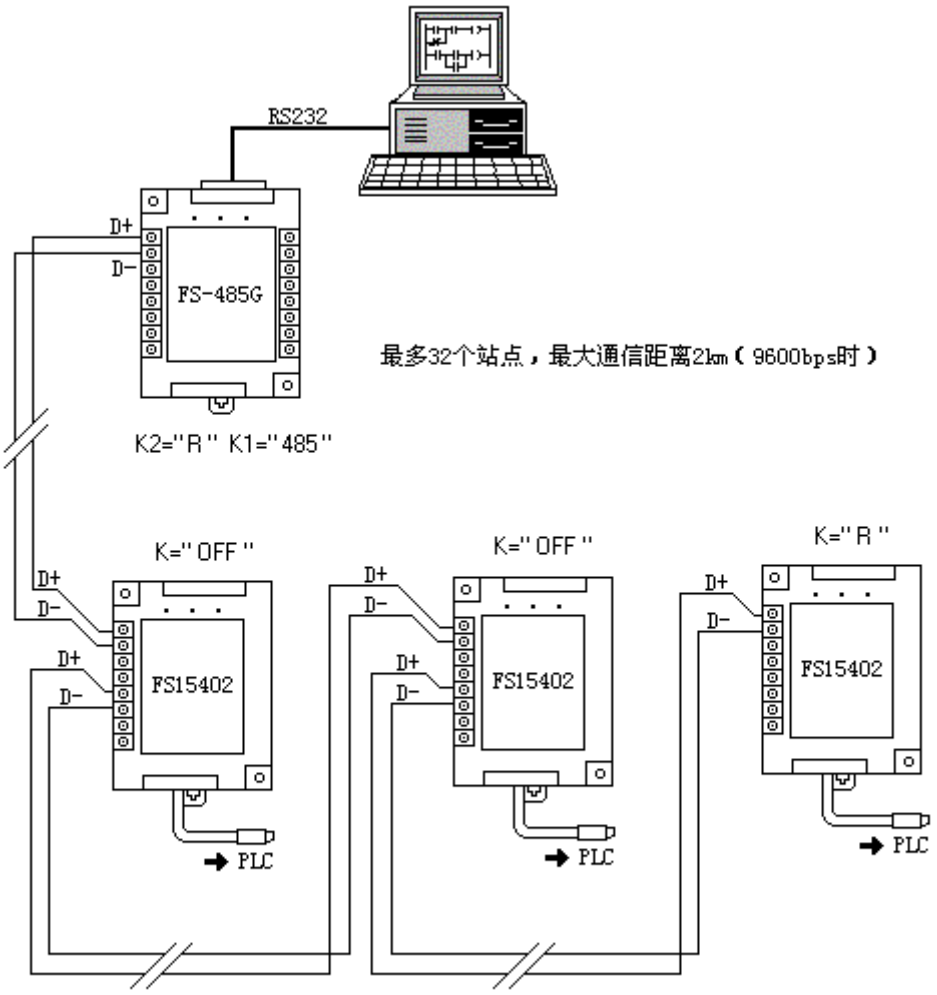
Notes: the terminal of same signal-name is connected in the product

RS485 communications network formed by FS15402:

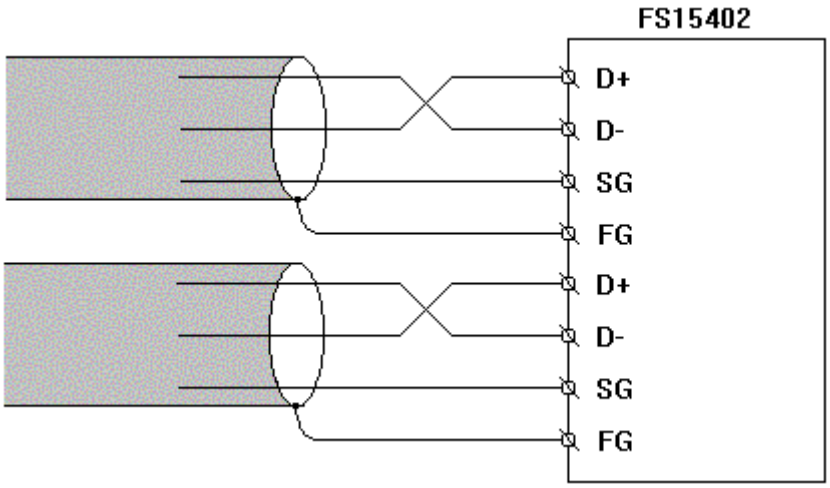
The picture below is RS485 communications network composed by FS15402 adapter. The computer adapter is Fourstar RS232/RS485 isolated converters FS-485G, set the RS485/422 selective switch to "485" position.

For the setting of terminal resistance in bus: the role of terminal resistance is to eliminate or minish the waveform distortion caused by the reflection of signal in the communication lines. Turn the terminal resistance setting switch at both ends of the bus such as FS-485G and the last FS15402 in the picture to "R" position (connect terminal resistance), trun the terminal resistance setting switch on other nodes to "OFF" position (don’t connect terminal resistance).

When the bus is longer than the maximum allowed length of the corresponding baud rate or the number of RS485 nodes in bus is over 32, RS485 repeaters should be installed in bus, recommended models: E485GP or E485GA.



For the communication lines: according to RS485 norms, communication lines should be the twisted pair whose the sectional area is 0.5 mm2. The figure above is the non-shielded twisted pair’s connection method. In the occasion with serious interference, twist-pair with shielding layer should be used. Connect the shielding layer of each part of circuit to the FG terminal, and to earth at the final point. And connect the SG signal ground of each RS485 with an another low resistance (cross-section is about 1 mm2) lead to ensure the ground of each nodes are equal, as shown below.



Software settings：

Be sure to set the communication parameter of FP1s and of a computer so that data can be exchange properly through C-NET ADAPTER S Types.

FP1，FP-M

Set the system register for C-NET ADAPTER using FP programmer or NPST-GR programming software.

Setting RS422：System register No.410

Setting RS232C：System register No.412 to No.415

Notes： Refer to the FP1，FP-M Technical Manual，FP programmer Operation Manual and NPST-GR Manual for details.

Set the baud rate of RS232C to 19200 or 9600 bps.

When using RS232C，the initial value of data format be required to set as follows；

8 bits data length

Odd parity

One for stop bit

CR as end code

NO STX as top code

Sample program

The following program enables you to send commands from your computer to FP1，FP-M and as a result，to know what FP1 operates.

Commands to be sent include no Block Code（BCC）.

Suppose that you set FP1，FP-M as follow；

Character length：7 bits

Parity：Odd

Stop：1

Baud rate：9600 bps

Station number for FP1：01

Note：Since the following program is made only for reference，it might impossible to apply to your

Personal computer.

Before programming， be sure to check the BASIC manual for your own computer.

Sample

```
10      OPEN“com1：9600，o，7，1”AS #1

20      FOR I=1 TO 10

30      A$=“%01#**RT”

40      PRINT #1，A$，CHR$（13）；

50      INPUT #1，R$

60      PRINT “SEND DATA”；A$

70      PRINT “RECEIVE DATA”；R$

80      NEXT  I
```