

“SC08G” Contact Signal I/O Card Instruction Manual

"SC08G" is a contact signal I/O card dedicated for Omron uninterruptible power supply (UPS).

- The SC08G can stop the UPS by outputting power outage and low battery level signals, and inputting an UPS stop signal from the outside.
Refer to Omron representatives for the latest compatible models.

Intended use of contact signal I/O card (SC08G)

- **This card unit is designed and manufactured for use with FA or OA equipment such as personal computers. Do not use it when very high reliability and safety are required as listed below.**
 - Medical equipment that may affect human lives
 - Applications that may cause injury (applications that directly affect the operation and control of planes, ships, railroads, elevators, and so on)
 - Applications that are constantly subjected to vibrations such as cars and ships
 - Applications in which a failure of this card unit may cause significant damage or effect to the society and public (important computer systems, main communication equipment, public transportation systems, and so on)
 - Equipment with the same level of importance
- **For equipment that greatly affects the safety of people and maintaining public functions, special considerations related to operation, maintenance, and management must be taken such as duplicating the system and emergency power generation facilities.**
- **When you want to use this card unit for an important system that requires very high reliability, contact the shop of purchase.**

Safety Precautions

To prevent injury, malfunction, fire, etc., be sure to read the precautions explained here.



CAUTION

Misuse may cause injury or property damage

* Property damage means damage to houses/household effects, livestock, and pets.



: Indicates prohibition. For example,  indicates that disassembly is prohibited.



: Indicates obligation. For example,  indicates that grounding is necessary.

Note that events categorized as a caution required matter also may cause more serious results under certain conditions.

⚠ CAUTION



When inserting or removing this card unit, turn off the uninterruptible power supply (UPS) main body and connection apparatus, and then pull out the "AC Input" plug from the power receptacle.

- Failure to do so may cause electric shock.



Do not disassemble, repair, or modify the card unit.

- Doing so may cause electric shock or fire.



When you perform attachment and removal of this card unit to an uninterruptible power supply (UPS), please work by installing an uninterruptible power supply (UPS) in the stable place in a direction that is fall-proof. In addition, be care not to drop the unit.

- Dropping or toppling the card unit may cause injury.
- If you drop the unit, stop using it and have it inspected and repaired. For repair, contact the shop of purchase.



Securely ground the UPS in which the card unit is installed.

- If the UPS unconnected to a ground wire and another device contact at the same time, an electric shock may be caused.



Do not touch parts on the board end face or the board when installing, unpacking, removing the card unit.

- Contact with the sharp board end face or any part may cause injury.
- Contact with any hot part may cause burns.
- The card unit uses electrostatic sensitive parts. Therefore, do not touch the connector contact port and other parts with bare hands in particular.



Do not touch the liquid when it is present on the internal board.

- Doing so may cause blindness or burns.
- If the liquid contacts your eyes or skin, wash it out thoroughly with a large amount of clean water, and then consult your doctor.



When there is an RS-232C connector (female DSUB 9P) on the UPS main body, provide secure wiring from the system side to the signal I/O connector (female DSUB 9P) of this card unit.

- Faulty wiring from the system side to the RS-232C connector (female DSUB 9P) may cause failure of the UPS, electric shock, or fire.



Comply with the signal I/O rating when connecting the card unit to the signal I/O connector, remote ON/OFF connector.

- Failure to do so may cause failure of the card unit, electric shock, or fire.



If smoke, abnormal smell, or abnormal sound is generated from the card unit, turn off the UPS and pull out the "AC Input" plug from the power receptacle.

- If you notice such a condition, stop using the card unit and contact the shop of purchase for inspection and repairs.



Observe the use and environment conditions described in this manual and the use and environment conditions of the UPS in which the card unit is installed.



Remove the pin for the jumper setting, and keep out of reach of infants and children.

- Failure to do so may cause infants or children to swallow and suffocate.



Do not allow the card unit to come in contact with water.

- Doing so may cause electric shock or fire.



Do not install/store the unit in places where there is flammable or corrosive gas, enclosed places such as cabinets, places exposed to direct sunlight, places with high temperature and humidity.

- Doing so may cause failure of the card unit, electric shock, or fire.



The operating and storage environments must not exceed the specification range.

Environmental specification	Operating ambient temperature/humidity	-10°C to 55°C/ 10 to 85%RH (With no condensation)
	Storage ambient temperature/humidity	-20°C to 55°C/ 10 to 85%RH (With no condensation)

- Failure to do so may cause failure of the card unit, electric shock, or fire.

Disclaimers

We are not liable for any damage or secondary damage resulting from the use of our product, including malfunction and failure of equipment, connected devices, or software.

1. Accessories

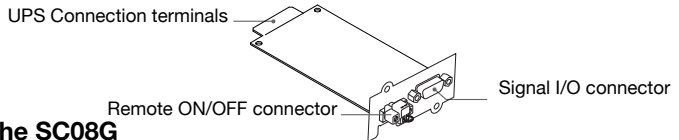
SC08G card unit.....1

Remote ON/OFF connector (Attached to the card unit)1

Dsub-9 pin plug.....1, Compliance information sheet1

2. Name of each part

The figure below describes the name of each part of the SC08G.



3. Installation of the SC08G



CAUTION

Before commencing the work, be sure to turn off the UPS, and pull out the “AC Input” plug from the commercial power outlet.



Check the insertion direction before inserting the card unit into the UPS. Never forcibly insert the card unit.

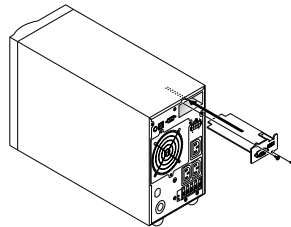


Do not forcibly pull or bend the black wire connected to the remote ON/OFF connector.



- (1) After pulling out the “AC Input” plug from the commercial power outlet, remove the 2 screws at the “Signal Card Expansion” slot on the rear of the UPS, and remove the slot carefully.
- (2) After confirming the settings of the card unit, carefully insert the card unit into the slot and securely fix it with the 2 screws.

(Ex. Inserting SC08G to BU1002SWG)



4. Signal I/O card

4.1 Signal Output

The card unit has 4 kinds of output signals.

Reverse output or normal output can be set for each signal output, and all signals are set to the reverse output when shipped from the factory. The signal output is a relay contact output.

● Backup Signal output (BU, BU)

This signal indicates that the UPS is in battery mode operation.

	Reverse output setting (Factory setting)	Normal output setting
Battery mode	Open between pins 1 and 2 of the signal output connector	Short circuit between pins 1 and 2 of the signal output connector
Normal mode	Short circuit between pins 1 and 2 of the signal output connector	Open between pins 1 and 2 of the signal output connector

● Low battery level signal output: (BL, BL)

This signal indicates that the UPS is in battery mode operation.

	Reverse output setting (Factory setting)	Normal output setting
Low battery level	Open between pins 3 and 4 of the signal output connector	Short circuit between pins 3 and 4 of the signal output connector
Normal mode	Short circuit between pins 3 and 4 of the signal output connector	Open between pins 3 and 4 of the signal output connector

- **Trouble Signal output (TR, TR)**

This signal indicates that an internal abnormality has occurred in the UPS.

	Reverse output setting (Factory setting)	Normal output setting
Internal abnormality	Open between pins 5 and 6 of the signal output connector	Short circuit between pins 5 and 6 of the signal output connector
Normal mode	Short circuit between pins 5 and 6 of the signal output connector	Open between pins 5 and 6 of the signal output connector

- **Battery Replacement Signal output (WB, WB)**

This signal indicates that the necessity of exchanging the battery has been detected by the test.

	Reverse output setting (Factory setting)	Normal output setting
Exchanging the battery is detected	Open between pins 6 and 7 of the signal output connector	Short circuit between pins 6 and 7 of the signal output connector
Normal mode	Short circuit between pins 6 and 7 of the signal output connector	Open between pins 6 and 7 of the signal output connector

4.2 Signal input

- **Input of the Backup Power Supply Stop Signal (BS, BS)**

This is an input signal for stopping outputs of the UPS.

Note: Settings can be configured from the input of the backup power supply stop signal to the stop of the output of the UPS. For details, refer to “UPS operation mode settings” and “Setting (or Changing) the setting switches” in “Changing the setting of the functions” of the UPS instruction manual.

	Reverse output setting (Factory setting)	Normal output setting
Stops UPS	Input High signal between pins 8 and 9 of the signal output connector	Input Low signal between pins 8 and 9 of the signal output connector
Does not stop UPS	Input Low signal between pins 8 and 9 of the signal output connector	Input High signal between pins 8 and 9 of the signal output connector

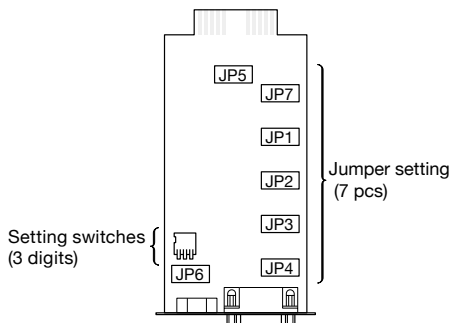
- **Remote ON/OFF Signal**

Remote ON/OFF signals can be used to start and stop the UPS, by using either an externally connected contact or the ON/OFF status of the open collector circuit.

To use this function, turn on the Power Switch of the UPS. (Note: When there is no AC power supply, it is not possible to start up UPS by the remote ON/OFF signals even though cold start is set ON.)

External contact	Operation	
	OP-OFF setting (Factory setting)	CL-OFF setting (Factory setting)
Open	Stop	Start
Close	Start	Stop

4.3 Items that can be set using the contact signal card



■ Jumper Settings

● Output signal function switching settings

By setting the jumper on the printed circuit board of the SC08G, switch the output signal function as follows:

Jumper symbol	Jumper setting (Factory setting)	Function	Jumper setting	Jumper setting
JP1	BU side	Backup signal reverse output (BU)	BU side	Backup signal normal output (BU)
JP2	BL side	Low battery level signal reverse output (BL)	BL side	Low battery level signal normal output (BL)
JP3	TR side	Trouble signal reverse output (TR)	TR side	Trouble signal normal output (TR)
JP4	WB side	Battery replacement signal reverse output (WB)	WB side	Battery replacement signal reverse output (WB)

● Function switching settings of the backup power supply stop signal

By setting the jumper on the printed circuit board of the SC08G (jumper symbol: JP5), switch the stop signal function as follows:

Jumper symbol	Jumper setting (Factory setting)	Function	Jumper setting	Jumper setting
JP5	BS side	The UPS stops upon receiving the High signal input.	BS side	The UPS stops upon receiving the Low signal input.

● High signal input voltage range settings of the backup power supply stop signal

By setting the jumper on the printed circuit board of the SC08G (jumper symbol: JP7), set the input voltage range on the High side of the backup power supply stop signal as follows:

Jumper symbol	Jumper setting (Factory setting)	Function	Jumper setting	Jumper setting
JP7	24 VDC side	High signal input voltage range from 8V to 24 V	12 VDC side	High signal input voltage range from 5V to 12 V



CAUTION

Do not apply voltage higher than the set High signal input voltage range.

● Doing so may cause failure or damage of the card unit, resulting in a fire or electric shock.



● UPS Start/Stop setting of the remote ON/OFF signal

By setting the jumper on the printed circuit board of the SC08G (jumper symbol: JP6), set the UPS Start/Stop by the remote ON/OFF signal as follows:

Jumper symbol	Jumper setting (Factory setting)	Function		Jumper setting	Function	
JP6	OP-OFF side	External contact open	UPS stop	CL-OFF side	External contact open	UPS start
		External contact close	UPS start		External contact close	UPS stop

■ Setting Switch

● Function settings using the setting switch

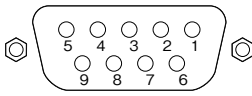
The function of this setting switch varies depending on the UPS equipped with the SC08G.

For details, refer to the "Items that can be set using the contact signal card" in the instruction manual of the UPS equipped with the SC08G.

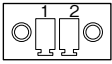
(Note 1: All setting switches are set to OFF when shipped from the factory.)

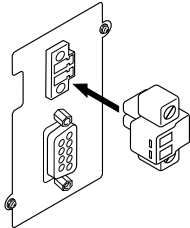
(Note 2: Always set the setting switch 3 to "OFF". Also, set the setting switch not described in the UPS instruction manual to "OFF".)

4.4 Signal I/O Connector (Female DSUB 9P)

Pin assignment	Pin number	Signal name
 <p>Front view Screw size: inch screw thread #4-40 UNC</p>	1	Backup Signal output-1 (BU-1)
	2	Backup Signal output-2 (BU-2)
	3	Battery Low signal output-1 (BL-1)
	4	Battery Low signal output-1 (BL-2)
	5	Trouble signal output (TR)
	6	COMMON (TR/WB-COM) of TR and WB signals
	7	Battery Replacement Signal output (WB)
	8	Backup stop signal input+ (BS+)
	9	Backup stop signal input- (BS-)

4.5 Remote ON/OFF connector

Pin assignment	Pin number	Signal name
 <p>Front view Screw size: inch screw thread #4-40 UNC</p>	1	Remote ON/OFF (+)
	2	Remote ON/OFF (-)



Use a wire that conforms to Table 1 when using the remote ON/OFF connector.

Table 1

Recommended cable size	AWG 14 to 28
Amount of stripped wire	6 to 7mm

4.6 Signal I/O Rating

● Signal Output (BU, \overline{BU} , BL, \overline{BL} , TR, \overline{TR} , WB, \overline{WB})

Relay rating

Applicable voltage: 30 VDC or less

Maximum current: 2A (under resistive load)

1A (under inductive load)

● Backup Power Supply Stop Signal Input (BS, \overline{BS})

Input voltage

HIGH (ON) 8 to 24 VDC (at the setting of 24 VDC)

5 to 12 VDC (at the setting of 12 VDC)

LOW(OFF) 0.7 VDC or less

High Sink current at signal input max. 20mA

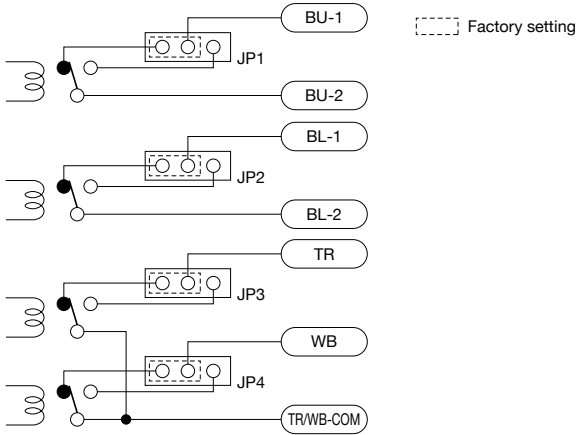
● Remote ON/OFF

Voltage between terminals: 5 VDC

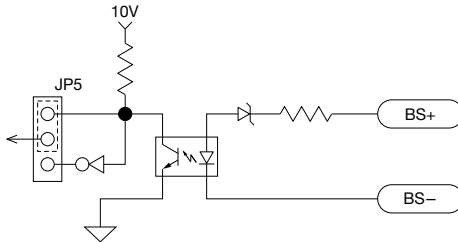
Current when closed: max.10 mA

4.7 Signal I/O circuit inside the SC08G

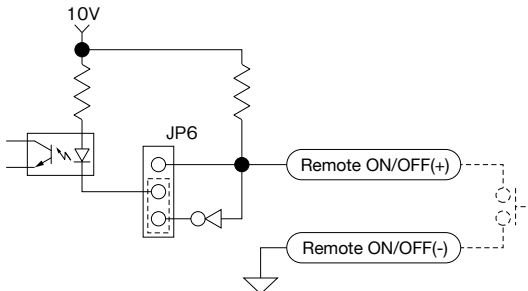
● Output signal circuit



● Input signal circuit

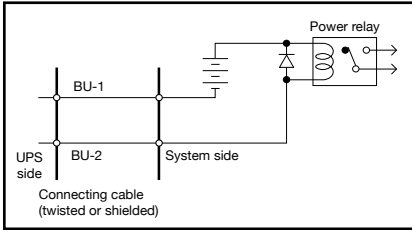


● Remote ON/OFF signal circuit

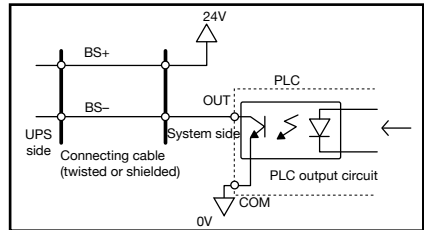


4.8 Signal I/O Circuit Usage Examples

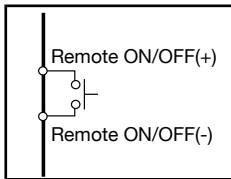
- BU signal output circuit and connection circuit example



- BS signal input circuit and connection circuit example



- Remote ON/OFF connection circuit example



4.9 Precaution When Using Signal Outputs

NOTE

- For any device connected to the signal output circuit, its rating must not exceed the rating specified in signal outputs of "4.6 Signal I/O Rating" when turning on or off the signal output. (Add a surge killer circuit as necessary.)

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