MINUTEMAN®
P O W E R   T E C H N O L O G I E S
by Para Systems, Inc.

PROGRAMMABLE RELAY CARD
USER MANUAL

INTRODUCTION

This Programmable Relay card is a UPS management product with 6 relay output contacts for monitoring the status and 1 input contact as a UPS shutdown or a battery test command.

Features:

- Monitors UPS events.
- 6 programmable relay output contacts.
- Configurable normal open or normal close for each relay contact.
- Configurable UPS shutdown delay time.
- Configurable input signal as remote shutdown or battery test.
- Has the ability to protect up to 6 computers by unattended graceful shutdown.

SPECIFICATIONS

|	
Size Net (L x W)	5.1" x 2.4"
Weight Net	0.50 lbs
Operating Temperature	0 ~ 40° C
Operating Humidity	10 ~ 80 %
Power Input Volts	8 ~ 20V DC
Power Input Current	10mA
Power Consumption	1.2 Watts
Relay Contacts Volts	24VDC (max)
Relay Contacts Current	1A (max)

INSTALLATION

Note: These Programmable Relay cards are designed to be Hot Swappable, but there is a remote chance that when Hot-Swapping the Programmable Relay card that the UPS will shutdown. MINUTEMAN recommends following steps 1 through 4 when installing the Programmable Relay card, but to hot-swap skip to step number 3.

1. Turn off all the equipment that is connected to the UPS.
2. Turn off the UPS and unplug the UPS's power cord from the AC wall outlet.
3. Remove the option slot cover plates from the rear panel of the UPS.
4. Insert the Programmable Relay card into the option slot, and secure with the retaining screws.
5. Connect the UPS's power cord to the AC wall outlet and turn the UPS on.
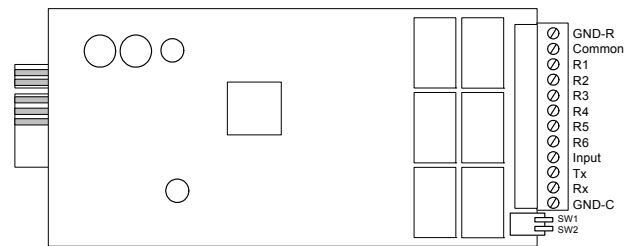6. Turn on all the connected equipment.

APPLICATION EXAMPLE

Set SW1 and SW2 to the OFF position. Apply 12VDC to the **Common** contact and connect the lamps to **R1~R6** terminals. Install a push button from the Common contact to the input terminal. Press the button for at least 3 seconds to shutdown the UPS remotely.
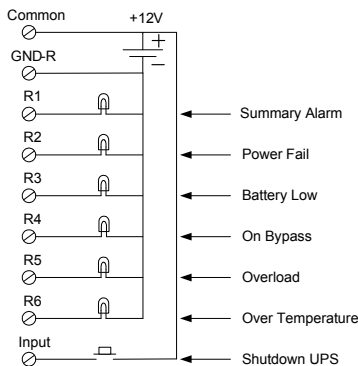
INTERNAL CIRCUIT
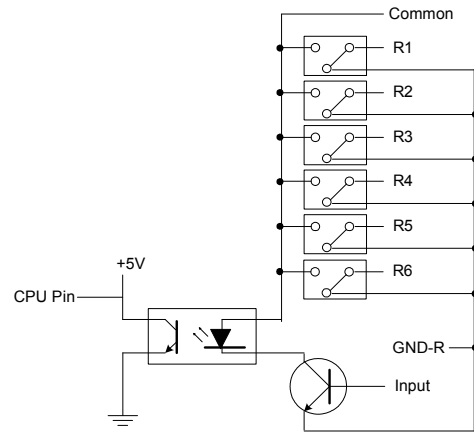
OUTLINE

I/O PINOUT

GND-R: Ground for relays	
Common: 12~24VDC	

	Default Alarm Event
R1	Summary Alarm
R2	Power Fail
R3	Battery Low
R4	On Bypass
R5	Overload
R6	Charger Fail

Input: Remote shutdown or battery test	
Tx: Transmit to PC, connect to sub9-pin2	
Rx: Receive from PC, connect to sub9-pin3	
GND-C: Ground for configuration Tx and Rx pins	

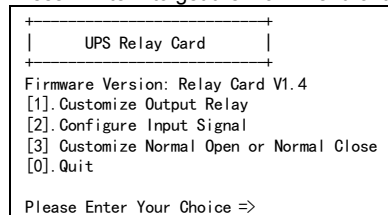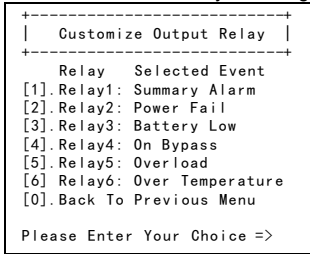|	OFF (Default)	ON
SW1	Normal open	Normal close
SW2	Default settings	Customized settings

PROGRAMMABLE CONTACTS

COMMUNICATION SETUP

1. Connect **Tx** to pin2, **Rx** to pin3 and **GND-C** to pin5 of PC RS232 port.
2. In the Windows environment, launch the Hyper-Terminal and/or PUTTY program then open the specified COM port.
3. Set the following properties:
   Baud rate: **2400**, Data Bits: **8**, Parity: **None**
   Stop Bit: **1**, Flow Control: **None**

CONFIGURATION

1. Press <Enter> to get the main menu of the Programmable Relay card.

```
+---------------------------+
|      UPS Relay Card       |
+---------------------------+
Firmware Version: Relay Card V1.4
[1].Customize Output Relay
[2].Configure Input Signal
[3] Customize Normal Open or Normal Close
[0].Quit

Please Enter Your Choice =>
```
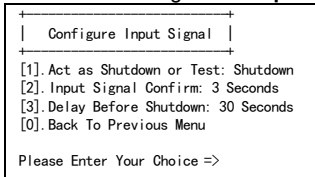
2. Press '1' to configure the alarm event for the Relays. Relays **R1~R6** can be configured for the following power events: Summary Alarm, Power Fail, Low Battery, On Bypass, Overload, Over Temperature, Output Off, UPS Shutdown, Charger Fail, Bypass Fail, Fan Fail, Fuse Fail, Replace Battery, UPS Disconnect, Battery Discharging, On Boost, On Buck, Test Fail.

```
+---------------------------+
|   Customize Output Relay  |
+---------------------------+
     Relay    Selected Event
[1].Relay1: Summary Alarm
[2].Relay2: Power Fail
[3].Relay3: Battery Low
[4].Relay4: On Bypass
[5].Relay5: Overload
[6].Relay6: Over Temperature
[0].Back To Previous Menu

Please Enter Your Choice =>
```
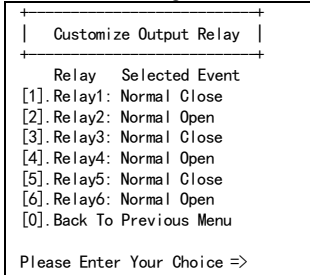
Once the configuration is complete switch **SW2 MUST** be switched to the ON position to apply the new settings. **SW2 MUST** remain in the ON position to use the new settings. Switch **SW2** back to OFF position to reset to the default settings.

3. Press '2' to configure the **Input** signal.

```
+---------------------------+
|   Configure Input Signal  |
+---------------------------+
[1].Act as Shutdown or Test: Shutdown
[2].Input Signal Confirm: 3 Seconds
[3].Delay Before Shutdown: 30 Seconds
[0].Back To Previous Menu

Please Enter Your Choice =>
```

In this menu, the input signal can be redefined as remote shutdown or battery test signal. The UPS shutdown delay time is also adjustable to a maximum of 9999 seconds.

4. Press '3' to configure the normally opened or closed for each relay.

```
+---------------------------+
|   Customize Output Relay  |
+---------------------------+
     Relay    Selected Event
[1].Relay1: Normal Close
[2].Relay2: Normal Open
[3].Relay3: Normal Close
[4].Relay4: Normal Open
[5].Relay5: Normal Close
[6].Relay6: Normal Open
[0].Back To Previous Menu

Please Enter Your Choice =>
```

Once the configuration is complete switch **SW2 MUST** be switched to the ON position to apply the new settings. **SW2 MUST** remain in the ON position to use the new settings. Switch **SW2** back to the OFF position to reset to the default settings. SW1 can be used to change the normally open or the normally closed contacts for all relays. SW1 set to the OFF position; normally open (default), SW1 set to the ON position; normally closed.

5. Press '0' to quit this configuration session. The system will prompt you to save or not. Press 'Y' to save your settings, 'N' to ignore.

POWER OPTION IN WIN 2000/XP

This relay card has the ability to provide UPS signals for Windows NT4/2000/XP/2003. First connect the RS232 port on the PC to the relay card as shown:
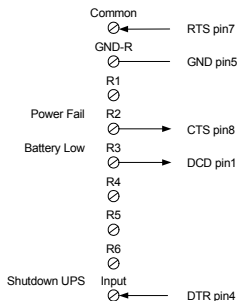
Then open the power option from control panel and click on the UPS tab to setup the signals polarity, select **Positive** for Power Fail, Low Battery and UPS Shutdown. Since the **R1~R6** contacts are programmable, the output contacts can be configured for 3 computers with 2 signals (power fail and low battery) or 6 computers with one signal (power fail or low battery).
Note: All of the computers must have the same earth ground potential. Connect all of the computers input power cords to the same UPS.

OBTAINING SERVICE

1. Call your dealer for assistance. If you cannot reach your dealer, or if they cannot resolve the problem call MINUTEMAN Technical Support at (972) 446-7363, or visit our Web site at www.minutemanups.com support. Please have the following information available BEFORE calling the Technical Support Department.
   a. Your name and address.
   b. Where and when the unit was purchased.
   c. All of the information about your UPS and relay card.
   d. The serial number of your UPS and relay card.
   e. Any information on the failure.
   f. A technician will ask you for the above information and, if possible, help solve your problem over the phone. In the event that the unit requires factory service, the technician will issue you a Return Material Authorization Number (RMA #). **NOTE: <u>We must have the model number and the serial number of the product to issue an RMA #.</u>**
   g. If the relay card is under warranty, the repairs will be done at no charge. If not, there will be a charge for repair.
2. Pack the relay card in its original packaging. If the original packaging is no longer available, ask the Technical Support Technician about obtaining a new set. It is important to pack the relay card properly in order to avoid damage in transit. Never use Styrofoam beads for a packing material.
   a. Include a letter with your name, address, daytime phone number, RMA number, a copy of your original sales receipt, and a brief description of the problem.
3. Mark the RMA # on the outside of all packages. The factory cannot accept any package without the RMA # marked on the outside.
4. Return the relay card by insured, prepaid carrier to:

Para Systems Inc.
MINUTEMAN UPS
1809 W. Frankford Road, Suite 150
Carrollton, TX 75007
ATTN: RMA #_____

LIMITED PRODUCT WARRANTY

Para Systems, Inc. (Para Systems) warrants this equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of three years from the date of purchase. For equipment sites within the United States and Canada, this warranty covers depot repair or replacement of defective equipment at the discretion of Para Systems. Depot repair will be from the nearest authorized service center. The customer pays for shipping the product to Para Systems. Para Systems pays ground freight to ship the product back to the customer. Replacement parts and warranty labor will be borne by Para Systems. For equipment located outside of the United States and Canada, Para Systems only covers faulty parts. Para Systems products that are depot repaired or replaced pursuant to this warranty shall only be warranted for the unexpired portion of the warranty applying to the original product. This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase.

The warranty shall be void if (a) the equipment is damaged by the customer, is improperly used, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; (b) the equipment is repaired or modified by anyone other than Para Systems or Para Systems approved personnel; or (c) has been used in a manner contrary to the product's User's Manual or other written instructions.

Any technical advice furnished before or after delivery in regard to use or application of Para Systems' equipment is furnished without charge and on the basis that it represents Para Systems' best judgment under the circumstances, but it is used at the recipient's sole risk.

EXCEPT AS PROVIDED HEREIN, PARA SYSTEMS MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation of implied warranties; therefore, the aforesaid limitation(s) may not apply to the purchaser.

EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL PARA SYSTEMS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, Para Systems is not liable for any costs, such as; labor for on-site installation, on-site maintenance or on-site service, lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, cost of substitutes, claims by third parties, or otherwise. The sole and exclusive remedy for breach of any warranty, expressed or implied, concerning Para Systems' products and the only obligation of Para Systems hereunder, shall be depot repair or replacement of defective equipment, components, or parts; or, at Para Systems' option, refund of the purchase price or substitution with an equivalent replacement product. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

No employee, salesman, or agent of Para Systems is authorized to add to or vary the terms of this warranty. Please go to our web site at www.minutemanups.com/support to fill out the Warranty Registration.

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