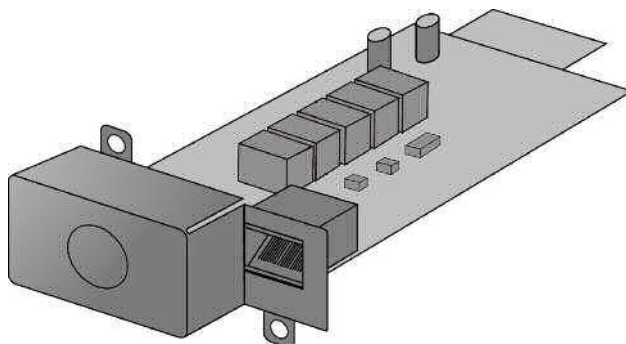


DERUNGS ELECTRONIC GmbH
Postfach 12
Eschlikonerstrasse 17
9542 Münchwilen TG
Telefon + 41 (0) 71 - 966 66 76
Fax + 41 (0) 71 - 966 66 73
E-Mail info@de-usv.ch
Internet www.de-usv.ch

AS400 Relay Card User Manual



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1.1 AS400 Relay Card Description

ABB's AS400 Relay card for PowerValue 11 gives the user the possibility to:

- Receive UPS internal information by SCI interface protocol;
- Bridge communication data between a computer and the UPS;
- Configure five output relay signals;
- Configure one input signal for UPS shutdown or remote on/off;
- Configure Dry contact normally opened or normally closed status
- Configure Dry contact function definition
- Configure Dry contact active delay time

This document specifies the Serial communication protocol of the AS400 Relay Card and guides the user throughout the available configurations.

Read carefully all instructions and save this manual for future reference.

1.2 Delivery, Transportation, Positioning and Storage

1.2.1 Receipt of AS400 card and visual inspection

Upon receiving the AS400 Relay Card, carefully examine the packing container. In case of damage, notify immediately the carrier.

1.2.2 Unpacking

After examining the package, open the carton box and check its contents as following:

- AS400 Relay Card
- 1x M3 Screw
- RJ45 to DB9 cable (for RS232, P/N 720-60679-00)
- This user manual
- Safety Cover

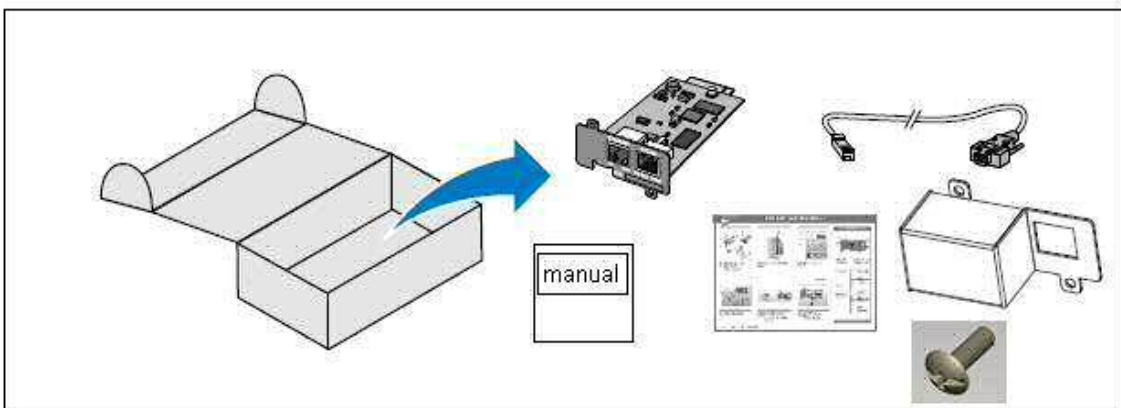


Figure 1: AS400 Relay Card Package Contents

1.3 General Characteristics

The Relay Card is composed of 3 main contacts as show in Figure 2.

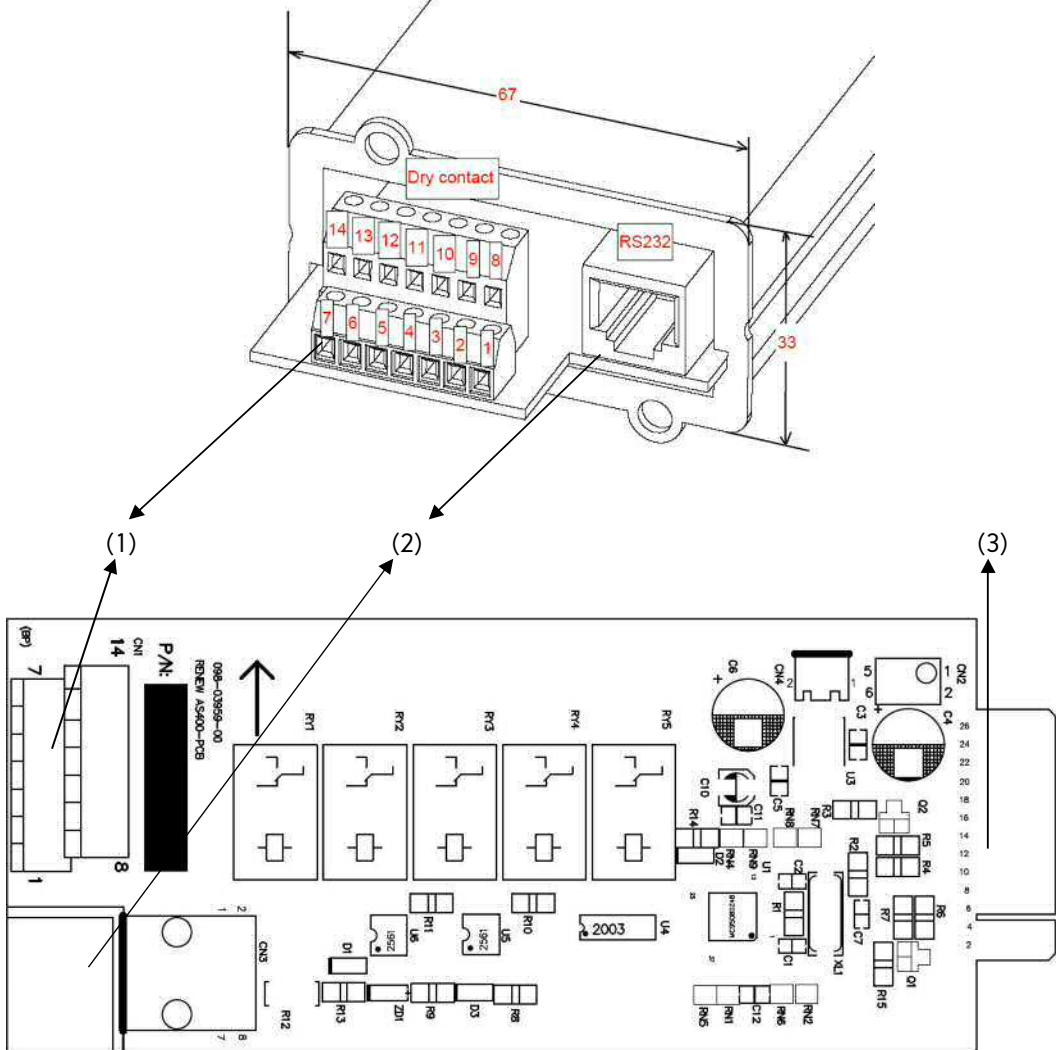


Figure 2: Layout of the Relay Card

PCBA Size: 146.2 x 60 x 1.6 mm

- (1) Dry contact connector
- (2) RJ45 Connector for RS232
- (3) UPS contact

1.3.1 Interface (14 pin Dry Contact Connector and RJ45)

The dry contact connector is organized according to the following table:

Segment	PIN Number	Specification/Function	Remark
Segment 1	Pin 9 and Pin 2	240 Vac/1A(Max) or 30 Vdc/1A(Max)	Output signal , NO or NC
Segment 2	Pin 10 and Pin 3	240 Vac/1A(Max) or 30 Vdc/1A(Max)	Output signal , NO or NC
Segment 3	Pin 11 and Pin 4	240 Vac/1A(Max) or 30 Vdc/1A(Max)	Output signal , NO or NC
Segment 4	Pin 12 and Pin 5	240 Vac/1A(Max) or 30 Vdc/1A(Max)	Output signal , NO or NC
Segment 5	Pin 13 and Pin 6	240 Vac/1A(Max) or 30 Vdc/1A(Max)	Output signal , NO or NC
Segment 6	Pin 8 and Pin 1	NA	Input signal (The external contact must be closed between pin 8 and pin 1)
Segment 7	Pin 14 and Pin 1	NA	Input signal (The external contact must be closed between pin 14 and pin 1)
Segment 8	Pin 7 and Pin 1	NA	Input signal (The external contact must be closed between pin 7 and pin 1)
RS232 (RJ45 cable to DB9F)			
TXD2	RJ45, Pin 3	12Vdc 3mA (Max)	Power system GND
RXD2	RJ45, Pin 6	12Vdc 5mA (Max)	
GND	RJ45, Pin 4	GND	

Table 1: Dry Contact Pin Assignment

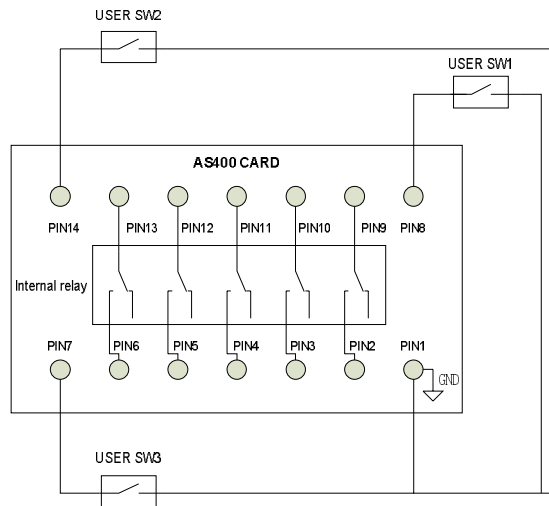


Figure 3: Segment illustration

Notes:

- 1 When closing the contact USER SW2, the AS400 Relay Card will send a command to the UPS to turn it on.
- 2 When closing the contact USER SW3, the AS400 Relay Card will send a command to the UPS to turn it off.
- 3 Do not close the contacts USER SW2 and SW3 at the same time.
- 4 Segment 7 (pin 14 and pin 1 / USER SW2) is fixed to "UPS On" function.
- 5 Segment 8 (pin 7 and pin 1 / USE SW3) is fixed to "UPS Off" function. (Refer to Section 1.3.3.1)

1.3.2 RJ45 to DB9

RJ45	DB9
3	2
4	5
6	3

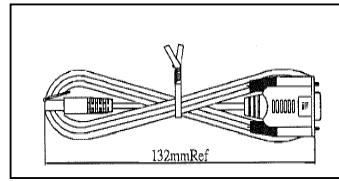


Figure 4: RS232 Cable

1.3.3 Interface with the UPS

Item	Specification/Function
- Pin 1	GND
- Pin 2	SNMPPOW
- Pin 3	RXDUPS
- Pin 4	TXDUPS
- Pin 5	*UNUSED*
- Pin 6	*UNUSED*
- Pin 7	-VCC
- Pin 8	SNMPSIG
- Pin 9	GND
- Pin 10	+VCC
- Pin 11~26	RESERVE

Table 2: Pin Assignment

1.3.3.1 Dry contact Functionality

Output signals

- Segment 1~5

It is possible to choose one function for a Segment according to Table 3.

Description	"1"	"0"
Utility Fail	Fail	Normal
Battery Low	Battery Low	Normal
General Alarm	Alarm	Normal
Bypass Status (Online UPS) Or AVR Status (Offline/LIA UPS)	Bypass Active Or AVR Active	Not Bypass Status Or Not AVR Status
Summary Alarm	Alarm	Normal
Battery Testing	In test mode	Not test mode
Shutdown Processing	UPS Shutdown	Normal
Over Load Warning	Over Load	Normal

Table 3: Output Signal

Input signals

- Segment 6
User can choose one function for a Segment according to Table 4.

Description	"1"	"0"
Battery mode shutdown	Only Battery mode shutdown	Normal
Any mode shutdown	Shutdown	Normal
Emergency power off	OFF	Normal
Remote On/Off	OFF	ON

Table 4: Input signal on Segment 6

- Segment 7
This segment is fixed to "UPS On" function.

Description	"1"	"0"
UPS On	ON	Normal

Table 5: Input signal on Segment 7

- Segment 8
This segment is fixed to "UPS Off" function.

Description	"1"	"0"
UPS Off	OFF	Normal

Table 6: Input signal on Segment 8

1.4 Configuring the Card

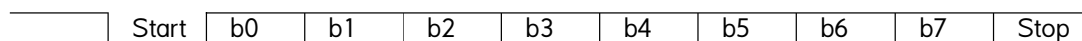
This chapter describes how to install, connect and configure ABB's AS400 Card.

1.4.1 Serial Data format

AS400 Relay Card data has a 2400 baud rate and consist of 1 start bit, 8 data bits, no parity, and 1 stop bit.

BAUD RATE: 2400 band
DATA LENGTH: 8 bits
STOP BIT: 1 bit
PARITY: NONE

Data format figure:



1.4.2 Installation

The card can be installed in UPS equipped with a communication bay without turning off the UPS or disconnecting the load.

To install the card:

1. Remove the communication bay cover from the UPS keeping the screws for further use.
2. Slide the card into the open slot and fix it with the screws removed in Step 1.

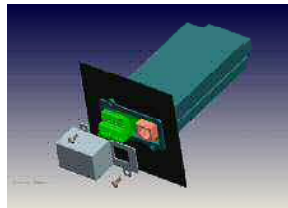


Figure 5: Card Installation

1.4.2.1 Connecting the Card

To connect the card to the computer and start the configuration:

1. Plug the RJ-45 end of the supplied serial cable into the Settings port on the card
2. Plug the other end of the serial cable into the serial COM port on the computer.



Figure 6: Card Connection

1.4.2.2 Configuration

To configure the card:

1. Verify that the serial cable (supplied) is connected to the card's Settings port and the computer's COM port.
2. Open your terminal emulation program (such as HyperTerminal). If you do not have it in your computer, you can download it from our website: <http://www.newavenergy.com/files/hypertm.zip>

- a. Start→All Programs→Accessories→Communications→Hyper Terminal

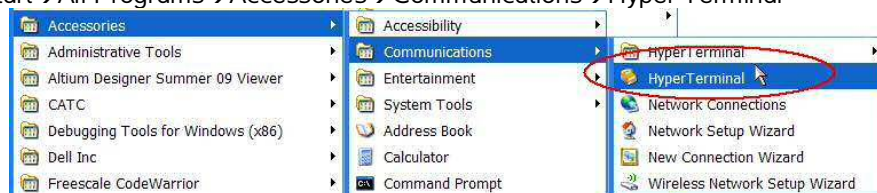


Figure 7: Hyperterminal path

- b. Or type HYPERTRM in Windows OS Run Dialog

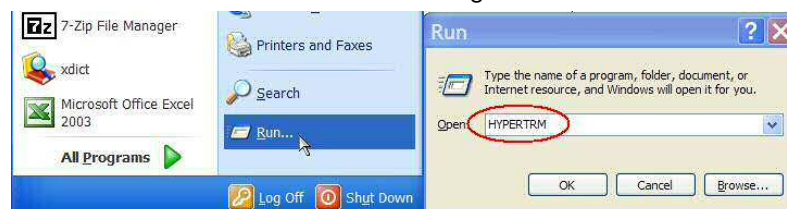


Figure 8: Hyperterminal through command window

3. Name the new connection



Figure 9: Connection Naming

4. Select the serial connection (such as COM1).



Figure 10: Serial port selection

5. Set the serial line to 2400 baud, 8 data bits, No parity, 1 stop bit and no flow control.

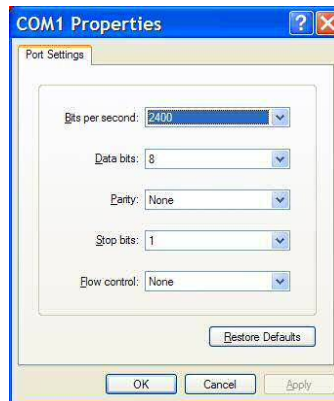


Figure 11: Serial line configuration

6. Set the Properties → Settings → ASCII Setup

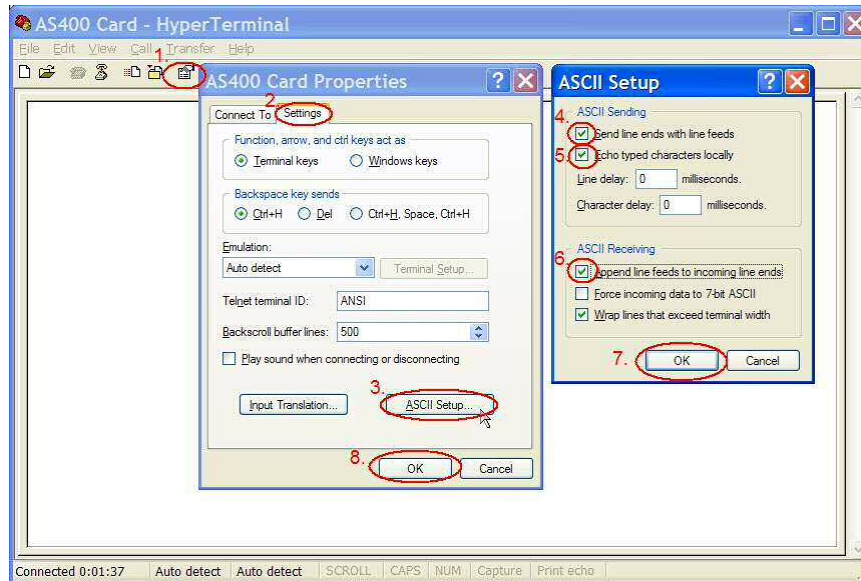


Figure 12: Properties Setup

1.5 Setting operation menu

1.5.1 Password menu

Type <ENTER> 3 times, the password menu displays as below

Enter Password to Activate Maintenance Menu

Figure 13: Password menu

Enter admin. The main menu is displayed as in Figure 15.
If the password incorrect, the correct password will be required as indicated below.

Password Error
Please Enter Correct Password

Figure 14: Password incorrect menu

1.5.2 Main menu

In the main menu, the user can choose between the six options indicated in Figure 15 and described in this section.

```

-----
AS400 Relay Card
-----
1. Function Segment Logic
2. Output Segment Function Configure
3. Input Segment Function Configure
4. Function Segment Active Delay Time
5. Return to Default Configuration
6. Firmware Version
0. Exit
-----
Please Enter Number:
    
```

Figure 15: Main menu

1.5.2.1 Function Segment Logic menu

The Function menu displays the Segment settings logic and current setting status.

```
-----  
Function Segment Logic  
-----  
  1. Segment 1 Logic, Current Setting (Normal Open)  
  2. Segment 2 Logic, Current Setting (Normal Open)  
  3. Segment 3 Logic, Current Setting (Normal Open)  
  4. Segment 4 Logic, Current Setting (Normal Open)  
  5. Segment 5 Logic, Current Setting (Normal Open)  
  6. Segment 6 Logic, Current Setting (Normal Open)  
  7. Segment 7 Logic, Current Setting (Normal Open)  
  8. Segment 8 Logic, Current Setting (Normal Open)  
  0. Exit  
-----  
Please Enter Number:
```

Figure 16: Logic Segment selection menu

Segments 1 to 5 are dedicated to output signal logic settings and Segments 6 to 8 are for input signal logic settings. To configure these segments, select the segment number. The selection menu from Figure 17 will be displayed. Choose among the options (open or close) and type enter. The menu will return to the function Segment Logic Menu (Figure 16).

```
-----  
Segment 1 Logic  
-----  
  1. Normal Open  
  2. Normal Close  
  0. Exit  
-----  
Please Enter Number:
```

Figure 17: Selection menu

1.5.2.2 Output Segment Function Configure menu

The Output Segment Function is used to configure the current setting status of the output segment.

```
-----  
Output Segment Function Configure  
-----  
  1. Segment 1 function, Current Setting (Utility Failure)  
  2. Segment 2 function, Current Setting (Battery Low)  
  3. Segment 3 function, Current Setting (General Alarm)  
  4. Segment 4 function, Current Setting (Bypass Status)  
  5. Segment 5 function, Current Setting (Summary Alarm)  
  0. Exit  
-----  
Please Enter Number:
```

Figure 18: Output Segment selection menu

Selecting one of this segments, the user can configure its functionality as indicated in Figure 19.

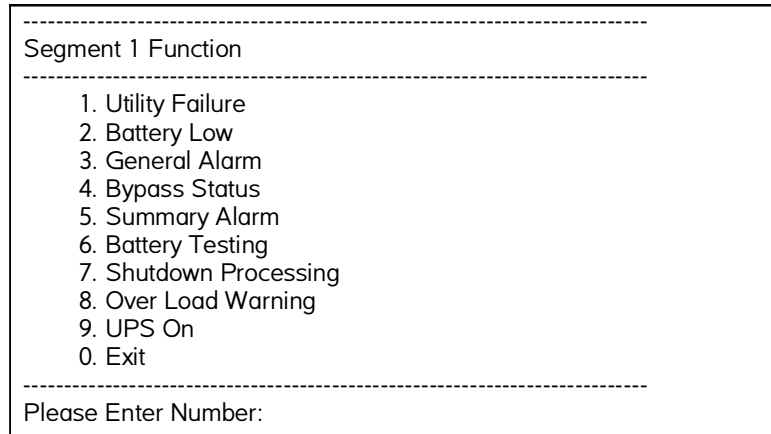


Figure 19: Output function select menu

The segments' default configuration is:

- Segment 1: Utility Failure
- Segment 2: Battery Low
- Segment 3: General Alarm
- Segment 4: Bypass Status
- Segment 5: Summary Alarm

Functions description:

1. Utility Failure: UPS input mains voltage or frequency out of range
2. Battery Low: UPS Battery voltage level is low
3. General Alarm: UPS has a failure alarm
4. Bypass Status: UPS is in Bypass mode
5. Summary Alarm: When any of the following is active, the segment will be activated: "Utility Failure", "General Alarm", "Bypass", "Battery Low", "Over Load Warning"
6. Battery Testing: Battery Test is in progress
7. Shutdown Processing: UPS executing shutdown after has received a shutdown command via communication port
8. Overload Warning: UPS load is over the overload warning level defined in the specification of the UPS
9. UPS On: The UPS is powered on and is capable of providing power to the system (whether utility power is available or not).

1.5.2.3 Input Segment Function Configure menu

The Input Segment Function menu supports the configuration and settings of the current status as indicated in Figure 20.

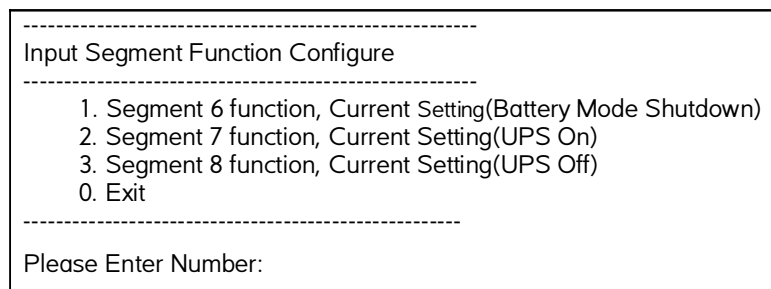


Figure 20: Input Segment select menu

The segments' default configuration is:

- Segment 6: Battery Mode Shutdown (Configurable)
- Segment 7: UPS On (Non-configurable)
- Segment 8: UPS Off (Non-configurable)

Segment 6 can be configured according to the possibilities indicated in Figure 21. Note that segment 7 and 8 cannot be configured.

```

-----
Segment 6 Function
-----
1. Battery Mode Shutdown
2. Any Mode Shutdown
3. Emergency Power Off
4. Remote On/Off
0. Exit
-----
Please Enter Number:
    
```

Figure 21: Input function select menu

Functions description:

1. Battery Mode Shutdown: If this signal is activated and the UPS is on battery mode, the UPS output will be disconnected.
2. Any Mode Shutdown: If this signal is activated, the UPS output will be disconnected.
3. Emergency Power Off: If this signal is activated, the UPS output will be disconnected and give the EPO warning. The UPS cannot then be turned on by pressing the LCD buttons.
4. Remote On/Off: If this signal is activated (close Pin 8 and Pin1 when Segment 6 is configured to Normally Open; or open Pin 8 and Pin1 when Segment 6 is configured to Normally Close) the UPS output will be disconnected.
If Signal is not active (open Pin 8 & Pin1 when Segment 6 is configured to Normal Open; or close Pin 8 & Pin1 when Segment 6 is configured to Normal Close) the UPS will turn on.

1.5.2.4 Function Segment Active Delay Time menu

The Function Segment Active Delay Time and current settings value can be configured as follows.

```

-----
Function Segment Active Delay Time
-----
1. Segment 1 Active Delay Time, Current Setting(Immediately)
2. Segment 2 Active Delay Time, Current Setting(Immediately)
3. Segment 3 Active Delay Time, Current Setting(Immediately)
4. Segment 4 Active Delay Time, Current Setting(Immediately)
5. Segment 5 Active Delay Time, Current Setting(Immediately)
6. Segment 6 Active Delay Time, Current Setting(Immediately)
0. Exit
-----
Please Enter Number:
    
```

Figure 22: Active delay time Segment select menu

The segments' default configuration is to execute "immediately".

Type 00 and Enter to configure the settings to "Immediately". Type 01 and Enter to configure a one second delay.

```

-----
Segment 1 Active Delay Time
-----
Please Enter Delay Time 00~99,
Only Pressing <ENTER> Means Abort and Exit Current Setting
Please Enter Delay Time:
    
```

Figure 23: Active delay time menu

1.5.2.5 Return to Default Configuration menu

This menu returns to the default configuration after a confirmation from the user.

```
Return to Default(Y/N)?
```

Figure 24: Default confirm menu

1.5.2.6 Firmware Version menu

Firmware Version and development data is shown in this menu.

```
-----  
Firmware Version  
-----  
    Firmware Version:00.05 2010/06/01  
    0. Exit  
-----  
Please Enter Number:
```

Figure 25: Firmware version menu

1.5.2.7 Exit menu

The exit menu gives the user the option to save the configuration or leave the program without saving.

```
-----  
Exit  
-----  
    1. Exit and Save  
    2. Exit and Without Save  
    0. Not Exit  
-----  
Please Enter Number:
```

Figure 26: Exit and save select menu