Upstate Networks Inc.

PC controlled vending since 1994

Document Reference: UNI-ASD-API-1.03

UPSTATE NETWORKS INC

Alternative Selection Device API

Revision 1.03

REVISION CONTROL

Revision	Date	Description	Written By	Approved By
1.0	May 2011	Initial Release	S. Gentile	
1.01	May 2011	Revised command /response structure	S. Gentile	
1.02	May 2011	Added RESET command	S. Gentile	
1.03	May 2011	Added Examples / data transfer format	S. Gentile	

CONTENTS

SECTION 1: REVISION HISTORY

1.01	May 2011	- Revised Key Command to 5 bytes from 2 bytes - Added crc and duration bytes - Added module response commands
1.02	May 2011	- Added Reset CMD. PC instructs the ASD module to reset itself - Added data transfer format
1.03	May 2011	- Added Examples - Added checksum calculation

SECTION 2: COMMAND / RESPONSE COMMANDS

2a. KEYPRESS COMMAND (5 bytes) – command sent to the ASD module indicating the desired key to simulate pressed. The ASD module will respond with the Module Response command.

HEADER (0BH)	ROW	COLUMN	DURATION	CRC
Y1	Y2	Y3	Y4	Y5

Y1: HEADER 0x0B

Y2: ROW:
row of simulated key press*

Y3: COLUMN
column of key press*

Y4: DURATION
length of time switch is closed for key press (mSec)

Y5: CRC
checksum

* see appendix A for AMS SENSIT III keypad layout

2b. COMMUNICATION TEST COMMAND (3 bytes) command sent to the ASD module to test communications. The ASD module will respond with the Module Response command.

HEADER	COMMUNICATION TEST	CRC
(0BH)	(05H)	
Y1	Y2	Y3

Z1: HEADER 0x0B

Z2: COMMUNICATION TEST 0x05

Z3: CRC
checksum

2c. MODULE RESET COMMAND (3 bytes) command sent to the ASD module instructing the module to reset itself. The ASD module will respond with the Module Response command and then reset.

HEADER	RESET	CRC
(0BH)	(06H)	
Y1	Y2	Y3

Z1: HEADER 0x0B

Z2: COMMUNICATION TEST 0x06

Z3: CRC
checksum

2d. MODULE RESPONSE (3 bytes) – ASD module response to a command received

HEADER (0BH)	RESPONSE CODE	CRC
Z1	Z2	Z3

Z1: HEADER 0x0B

Z2: RESPONSE CODE
0x00 – ACK
0xFF – NAK
0x0F – CRC ERROR

Z3: CRC
checksum

SECTION 3: DATA TRANSFER FORMAT

Communication between the ASD module and simulated keypad device (pc, embedded control, plc…) will be RS-232 serial communication 9600, 8, 1, N.

Data sent from device to the ASD module will be hexadecimal sent in binary.

Data sent from ASD module to device will be the ASCII representation of the hexadecimal values followed by CRLF (0x0D || 0x0A).

The checksum byte is calculated by adding all data bytes. The checksum byte is not included in the summation. The carry bit for checksum additions is ignored since the checksum byte is limited to eight bits.

0x0B	HEADER
0x06	ROW
0x07	COLUMN
0xFF	DURATION
0x117	SUMMATION

The sent checksum would be 0x17.

APENDIX A

Figure 1

	Col 0	Col 1	Col 2	Col 3
Row 0			**1**	**2**
Row 1			**3**	**4**
Row 2			**5**	**6**
Row 3			**7**	**8**
Row 4			**9**	**0**

APENDIX B: EXAMPLES

ACTION	Device to ASD	ASD response
Simulate numeral 1 key	0B 00 02 50 5D	0B 00 0B (ack)
Simulate numeral 2 key	0B 00 03 50 5E	0B 00 0B (ack)
Simulate numeral 3 key	0B 01 02 50 5E	0B 00 0B (ack)
Simulate numeral 4 key	0B 01 03 50 5F	0B 00 0B (ack)
Simulate numeral 5 key	0B 02 02 50 5F	0B 00 0B (ack)
Simulate numeral 6 key	0B 02 03 50 60	0B 00 0B (ack)
Simulate numeral 7 key	0B 03 02 50 60	0B 00 0B (ack)
Simulate numeral 8 key	0B 03 03 50 61	0B 00 0B (ack)
Simulate numeral 9 key	0B 04 02 50 61	0B 00 0B (ack)
Simulate numeral 0 key	0B 04 03 50 62	0B 00 0B (ack)
Communication Test	0B 05 10	0B 00 0B (ack)
Reset	0B 06 11	0B 00 0B (ack)
Simulate numeral 22 key	0B 06 04 50 65	0B FF 0A (nak) – received a keypress command with row and column not configured for the vending machine.
Simulate numeral 3 key with bad checksum	0B 01 02 50 6B	0B 0F 1A (crc error) – checksum error. Resend command.