SmartPIN L80 User Manual

80180501-001 Rev. B
15 March 2022

Revision History

Date	Rev	Changes	By
11/10/2021	A	• Initial Release	CB
03/15/2022	B	• Bootloader Function ○ Updated baud rate. • Removed Set Remote Key Injection Timeout command. • Updated the keys pressed/sent by the Get Function Key command.	CB

Table of Contents

1. Overview

ID TECH's SmartPIN L80 provides a compact, rugged, secure keypad interface for POS systems requiring PIN and/or manual-entry capability. The device's 15-key layout and optional built-in LCD make it ideal for kiosks and other unattended applications.

For development of applications that communicate with the SmartPIN L80, please ask your ID TECH representative about the ID TECH Universal SDK for L80 (Windows), which contains libraries (DLLs), C# source code, a demo app, and documentation for a C# API on Windows. By using the Universal SDK, you can save time developing host applications that talk to the L80 via USB or RS-232 and take advantage of many convenience methods (including encryption libraries) exposed via the high-level-language API.

Low-level access to L80 via firmware commands can be achieved via USB-HID or RS-232 (serial connection). This manual documents the low-level commands used to control the L80 and provides essential information required for establishing a serial connection to the device.

1.1. Features

- PCI 6.x certified
- 3x5 layout: 0-9 numerical keys, Cancel, Enter, F1, F2, F3, plus 32x128-pixel liquid crystal display
- Function keys adjacent to the LCD
- One tri-color LED on the back of the L80 to display unit status
- Meets ADA, ANSI, and ISO standards for a PIN Entry Device
- Audio feedback
- Built-in gasket for watertight mounting
- IP65 rated for dust and water resistance
- IK08 rated for intrusion resistance
- Secure schemes for authorized activation, installation, and injection of keys
- Low power consumption when PIN pad is in sleep mode
- Support for TDES encryption
- Master/Session & DUKPT key management
- Supports multiple key slots, which can store fifteen (15) DUKPT keys and twelve (12) 2048-bit RSA public keys as X.509 certificates
- Encrypted text and clear text entry
- RoHS and REACH compliant
- One-year manufacturer warranty
- Minimum 1,000,000 keystroke operations
- Firmware is easily upgraded in the field via the serial communication interfaces

1.2. Agency Approvals

- FCC Class A
- CE
- RoHS
- REACH
- VCCI

2. Specifications

Hardware	
Interface	USB-HID, RS-232 (serial)
Power Supply	USB power supplied by host cable USB-HID mode or AC-adapter in RS-232 mode
Power Consumption	Run mode: <200 mA Sleep mode: 2.5 mA Stop mode: 0.5 mA
Physical	
Length	93.5mm
Width	60mm
Depth	26.4mm
Weight	111.5g
LCD Screen	
Dimensions (in pixels)	128 (width) x 32 (height)
Environmental	
Operating Temperature	-20°C to 70° C
Storage Temperature	-40°C to 80° C (-40° to 176° F)
Operating Humidity	15% to 95%, non-condensing
Storage Humidity	
IK Rating	IK08
IP Rating	IP65
Drop Test	4-foot drop

Wake-up time from sleep mode: <500 ms.
Wake-up time from stop mode [1]: <8 seconds.

2.1. LED Specifications

There is one tricolor (red, yellow, green) LED on the back of the L80 to display unit status. Looking at the back of the L80, with the top (LCD end) up, the LED is on the left side.

Any given color of LED light can have multiple meanings depending on the context; for details, see the table under LCD and Beeper State Diagram.

---

[1] Stop Mode is a low-power version of Sleep Mode. It consumes less power than Sleep Mode but requires a soft reboot to wake up from sleeping.

2.2. Keypad Specifications
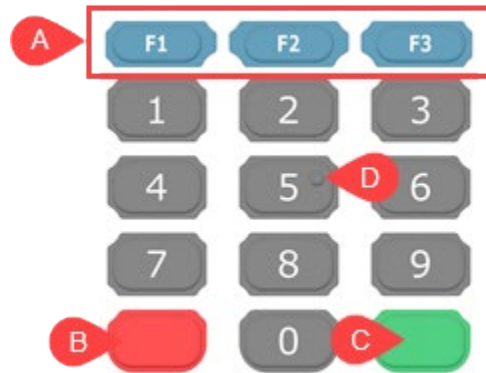
Color: Number keys are Black C; Function keys (A) are blue Pantone 7700C; Cancel key (B) is red Pantone 032U; Enter key (C) is green Pantone 355U.
Layout: Alphanumeric characters printed on the keys. Tactile identifier on the numeral key 5 (D) meets ADA standards.

2.1. L80 Dimensions
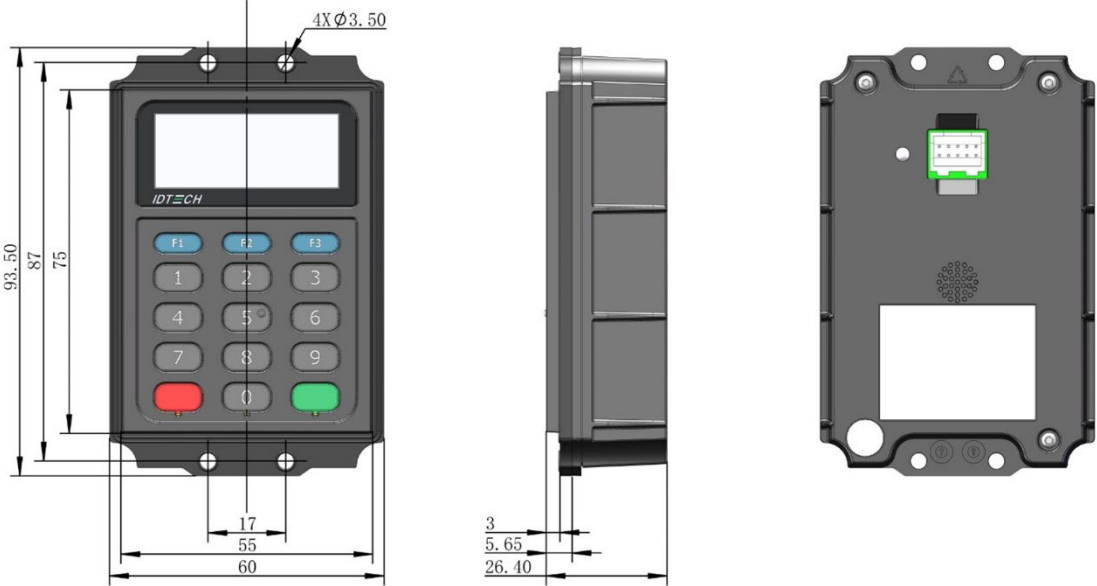
3. Base Functionality

The section below describes the SmartPIN L80's base functionality.

3.1. PIN Pad Functions

- PIN MK/SK, DUKPT Key Management.
- TDES Encryption/AES encryption.
- Compact key layout (3 x 5 layout: 0-9 numerical keys, Cancel, Enter, F1, F2, F3).
- Supports encrypted text and clear text entry.
- Low power consumption when PIN pad is in sleep mode/stop mode.
- PCI-PTS 6.x certified.

3.2. Interface Functions

- The L80 supports both USB-HID and RS232 interfaces.

3.2.1. RS232

- Baud rates supported: 2400, 4800, 9600, 19200, 38400, 115200 bps
- Data bits: 8
- Parity: Odd, Even, or None
- The COM default settings are initialized to: 38400, 8, 1, & None

3.2.2. USB-HID

- PID: 0x4660 for LCD model, 0x4661 for non-LCD model
- VID: 0x0ACD

3.2.3. Key Injection Functions

- Compatible with FutureX SKI 9000 HSM for PIN Key Injection.
- Can communicate with HSM using the key injection protocol for unattended products.
- Supports ID TECH remote key injection based on TR-31.

3.2.4. Asymmetric PKI-RKI

Asymmetric PKI-RKI function is compatible with Local POS Computer (LPC) for PIN DUKPT Key, PIN Master key, Pairing BDK key.

- Communicates with Local POS Computer (LPC) via RS232 port
- Communicates with Local POS Computer (LPC) via USB port

3.3. Low-Power Modes

The L80 features two low-power modes: Sleep Mode and Stop Mode.

3.3.1. Sleep Mode

While using the RS232 interface, Sleep Mode is controlled by a timeout after the L80 is idle for a specified time (default is 120s). While using the USB interface, Sleep Mode is controlled by the USB suspend and resume signals. Sleep Mode is used for battery-operated and solar-powered systems. It reduces power consumption to a much lower level (<2.5mA for all connection types) than full-power mode (200 mA) but leaves the device able to be woken up by key press or communication from the host.

3.3.1. Stop Mode

Stop Mode is controlled by the application through a specific command. Stop Mode reduces power consumption to the lowest possible level (<1mA). An L80 in Stop Mode can only be woken up by a physical key press.

3.4. Bootloader Functions

The firmware can be upgraded via USB/RS-232 port (Baud rate is 38400).

For detailed information, please refer to document P/N 80000420-001, *Bootloader Firmware Specification (V57).doc*.

4. Installation and Pairing

The following sections describe how to install and mount the L80, as well as how to pair it with a VP5300 or VP5300M reader.

4.1. Equipment Checklist

Verify that you have the following hardware for installing the SmartPIN L80:

- SmartPIN L80 (P/N 80180003-51)
- M3 nut x4 and nut sleeves
- JST to RJ11 cable (P/N 80180213-50) or JST to USB cable (P/N 80180215-51) or JST to RS232 cable (P/N 80180216-50) or JST to JST cable (P/N 80171267-50)
- A VP5300 or VP5300M card reader

4.2. Initial Security Inspection

Upon receiving the device, the merchant or acquirer must perform a visual inspection:

1. Check the device package, make sure the sealed tamper-evidence tap is not broken.
2. Check the tamper evidence physical seals, make sure they are intact.

3. Check the appearance of device to make sure there isn't any overlay or hole on the device.
4. Check the device label. Make sure the HW ID is **80180001** or **80180002,** both of which are approved by PCI SSC.
5. Power on the device and read the firmware version from the LCD. Make sure the firmware version is *SmartPIN L80 FW V1.00.xxx.S*

6. Observe the LCD, LED, and buzzer, and make sure the device is not in tamper mode. If the device is in tamper mode, the device behavior is:

	SmartPIN L80 w/o LCD	SmartPIN L80 w/ LCD
LCD	N/A	Fatal Error
Buzzer	Buzzing noise	Buzzing noise
LED	Red	Red

4.3. Mounting

Use the provided cutouts to mount the device using M3 nuts and screws or equivalent (shaft diameter 3mm or 0.12 inch).

Note: The head of the screw should be greater than 5.5mm, and less than 9mm. For best results, use a washer (with outside diameter greater than 0.27 in. or 7 mm, less than 0.35 in. or 9mm) under the screw head.
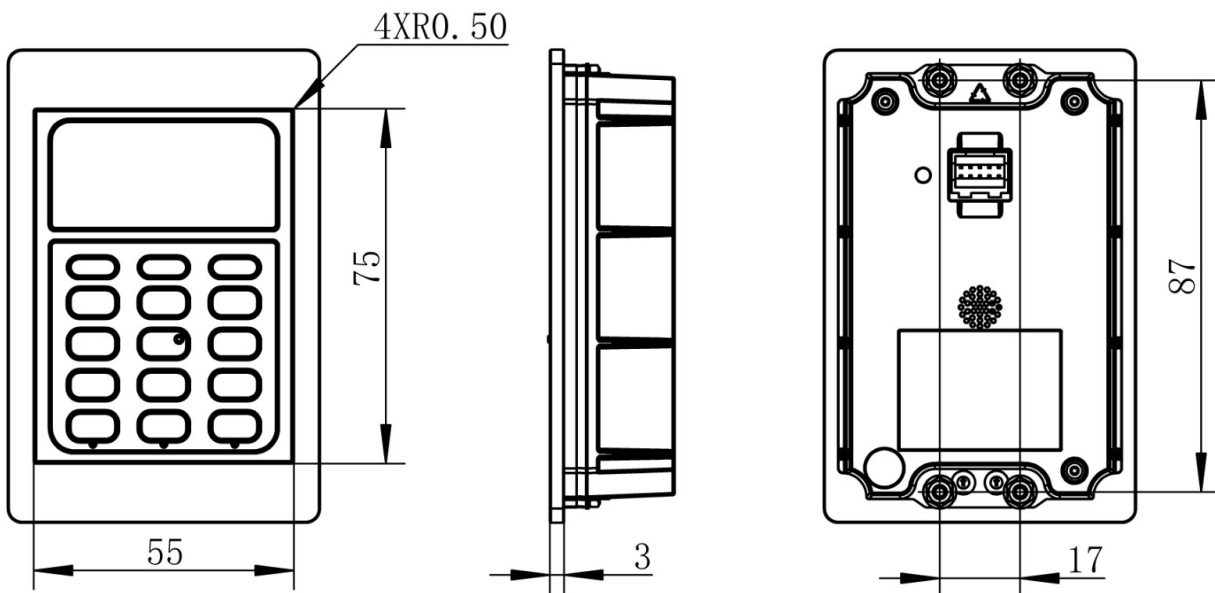
4.4. PIN Pad and MSR Pairing Solution

The steps below describe how to pair an L80 and MSR device.

4.4.1. Step 1: Send the Send MSR KSN for Pairing to the L80

First, use the **Send MSR KSN for Pairing** command to send the Pairing MSR KSN from MSR device to the L80.

Command Name: Send MSR KSN for Pairing

Command Body:
75 46 10 00 + [20 bytes ASCII KSN]

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02		00	75 46 10 00 + [20 bytes ASCII KSN]			03
Output Hex String:						

Response Example

STX	Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02	51	00	06 + [80 bytes TR-31 Block Version B Encrypted PAN Encryption Key], or 15 + failure information (see below)			03
Response Body: 06 + [80 bytes TR-31 Block Version B Encrypted PAN Encryption Key] or 15 07 00: No BDK of Pairing MSR Key, Or 15 07 03: Pairing Failed, Or 15 07 04 –MSR Pairing Key Other Error						

Note:
- BDK of Pairing MSR Key will generate a Pairing DUKPT Key according to the KSN. PAN Encryption Key is a random number.
- Encrypted PAN Encryption Key Array is encrypted by Pairing DUKPT Key.

4.4.2. Step 2: Send the MAC to the L80

Use the **Send MAC for Pairing** command to pass the MAC to the L80.

Command Name: Send MAC for Pairing

Command Body:
75 46 10 01 + [20 bytes ASCII KSN] + [6 bytes ASCII MAC]

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02		00	75 46 10 01 + [20 bytes ASCII KSN] + [6 bytes ASCII MAC]			03

Response Body:
06 (OK, the L80 device saved the new PAN Encryption Key)
or
15 07 03: Pairing Failed
or
15 07 04: MSR Pairing Key Other Error

4.5. Updating L80 Firmware via Serial-to-USB cable

The steps below describe the process for updating L80 firmware via the Universal SDK Demo.

Note: Before you begin, contact your ID TECH representative to receive the most recent L80 firmware. Download the ZIP file and extract it to your computer.

1. Connect the L80 to your PC via either USB or serial port.
2. Download and install the latest USDK Demo from the ID TECH Knowledge Base (if you cannot access the link, please contact support).

3. Open the USDK demo from the Windows Start menu.
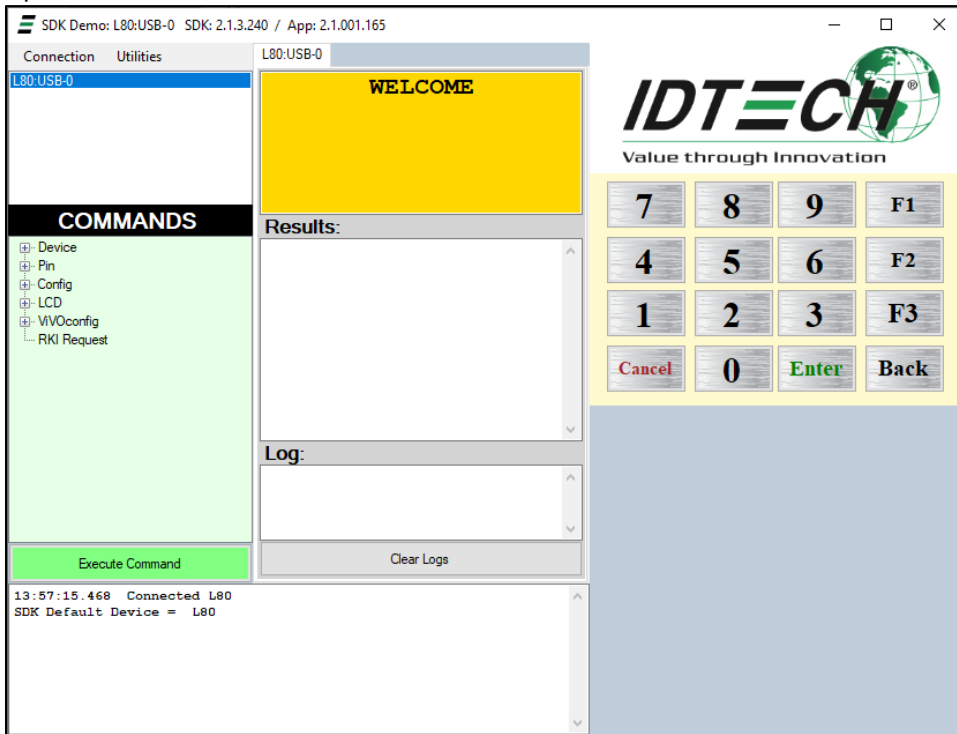
4. **Under **Device**, select **Update Device Firmware**, then click **Execute Command**.**
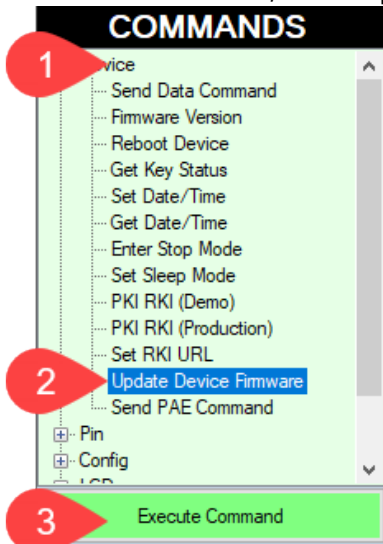
5. Navigate to and select the L80 firmware you downloaded earlier and click **Open**.
6. The L80 will reboot and enter the bootloader, at which point the SDK demo begins updating the device.
7. When the firmware update completes, the L80 will reboot again and the USDK demo will prompt **Firmware Update Successful**.

5. LCD, Beeper, and LED States

The section below describes the L80's LCD screen and LED and beeper behaviors.

5.1. LCD and Beeper State Diagram

- PK: Public Key (Manufacture Key)
- FK: Firmware Key
- NK: Numeric Key CV: Check Value
- DTV: Date & Timer Value

Device State	Definition	LCD Display Message	Beeper State	LED auxiliary indicator
Deactivation	No **PK, FK, CV, NK,** and **DTV**	**Line0:** Fatal Error **Other line:** Starting/Battery/BAT&Tamper/FirmwareCheck/Tamper/Other The second line describes the cause of de-activation	Fast beeping	Steady Red
Load Important Data State	Need to load **PK, FK, CV, NK,** and **DTV**	Load Check Value & Related Key	Slow beeping	Steady Red
Activation1	Activation **PK, FK, CV, NK,** and **DTV** loaded successfully No DUKPT Key or Master Key	Ready	Not beeping	• If legally in Install State: Steady Orange
Load Key State	Activation **PK, FK, CV, NK,** and **DTV** loaded successfully Unit prepared to load DUKPT Key or Master Key	Refer to XX DUKPT Key Loading ... Master Key Loading...	Refer to Key Loading Note	• If legally in Install State: Steady Orange
Suspend for Get PIN	Activation **PK, FK, CV, NK** and **DTV** loaded successfully GET PIN more than 120 times per hour by MKSK	**Line0:** SUSPEND **Other lines:** Get PIN Other lines describe the cause to suspend	Not beeping	• If not set user passwords: Blink Yellow • If set user passwords: Steady Yellow • If legally Install State: Steady Green

Device State	Definition	LCD Display Message	Beeper State	LED auxiliary indicator
Activation2	Activation **PK, FK, SCV, NK,** and **DTV** loaded successfully At least DUKPT Key or MKSK is loaded successfully	Ready	Not beeping	• If not set user passwords: Blink Yellow • If set user passwords: Steady Yellow • Blinking Green after loading LCL-KEK • Steady Green after loading PIN/DATA key

5.2. Other LCD State for PIN function

State	LCD Display Message	Note
Checking Firmware	Firmware Checking...	
Get Encrypt PIN	Line 0:xxxxxxxx Line 1:xxxxxxxx	
Get Numeric	Line 0:xxxxxxxx Line 1:xxxxxxxx	The Message and Plaintext Numeric Display is defined by Command.
Get Numeric	Line 0:xxxxxxxx Line 1:xxxxxxxx	The Message and Star Display is defined by Command.
Suspend	Line 0: SUSPEND Line1: PWD ERR	
Modify default password	Please input one password ******** Please input new password ******** Please input new password again ******** Please input another password ******** Please input new password ******** Please input new password again ********	Modify two groups' default passwords to user passwords.
Checking Firmware	Firmware Checking...	
Get Encrypt PIN	Line 0:xxxxxxxx Line 1:xxxxxxxx	
Suspend	Line 0: SUSPEND Line 1: Get PIN	Get Encrypted PIN under MKSK more than 120 times per hour.

5.3. Beeper Tone

Name	Tone Note
Normal Tone	Beep tone once
Complete Tone	Beep short tone 2 times
invalid Tone	Beep short tone 3 times

5.4. Tamper and Failed Self-Check Indicators

The SmartPIN L80 displays the following indicators when it has been tampered or has any of the other following internal issues, such as an expired certificate, missing key, or similar fault discovered during a self-check.
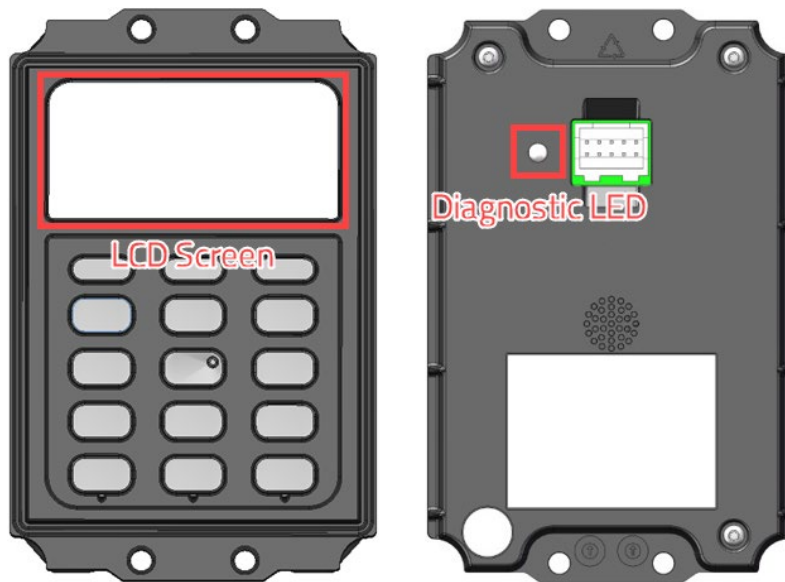
Indicator	Tampered Status	Other Issue Status
LED	Solid Red	Solid Red
LCD Display Message	Line 0: "Fatal Error" Line 1: "Tamper"	Line 0: "Fatal Error" Line 1: "Firmware Check"
Buzzer (built in)	Alarm Tone	Alarm Tone

6. Firmware Commands

The following sections list the L80's firmware commands.

6.1. NGA Command and Response Format

The L80 uses NGA protocol commands and responses in general communication. The format is:
`<STX><Len_Low><Len_High><Command Body/Response Body/Notification Body><CheckLRC><CheckSUM><ETX>`

Where:

- `<STX>` is 0x02 and `<ETX>` is 0x03
- `<Len_Low><Len_High>` is length of `<Command Body/Response Body/Notification Body>`
- `<CheckLRC>` is LRC (8-bit XOR) of all data bytes in `<Command Body/Response Body/Notification Body>`
- `<CheckSUM>` is SUM (8-bit SUM) of `<Command Body/Response Body/Notification Body>`
    - Response Body: `<Response Status>` + [`<Response Data>`]
    - `<Response Status>`: status of the response. 1 byte. NAK: 0x15
    - ACK: 0x06
    - `<Response Data>`: main response string.
    - If `<Response Status>` is ACK: More bytes needed.
    - If `<Response Status>` is NAK: Response data is Error codes (2 bytes).
    - Next section lists `<Command Body>`, `<Response Body>`, and `<Notification Body>` detailed.

6.2. General Firmware Commands

The section below details general firmware commands for the L80.

6.2.1. Get Firmware Release Version

The **Get Firmware Release Version** command retrieves the release version number for the L80's current firmware.

Command Body: 78 46 01

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	78 46 01	3F	BF	03
Output Hex String: 02 03 00 78 46 01 3F BF 03						

Response Example

STX	Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02	25	00	06 <Firmware Version String>	3A	74	03
Return Hex String: 02 25 00 06 49 44 20 54 45 43 48 20 53 6D 61 72 74 50 49 4E 20 4C 31 30 30 20 46 69 72 6D 77 61 72 65 20 56 31 2E 30 30 3A 74 03 <STX><length byte low><length byte high><ACK>ID TECH SmartPIN L80 Firmware V 1.00 <LRC><SUM><ETX>						

6.2.2. Get Internal Firmware Version

The **Get Internal Firmware Version** command retrieves the internal version number for the L80's current firmware.

Command Body: 78 31

Response Example

STX		Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02		25	00	06 <Firmware Version Number>			
Return Hex String:							

Response Body: 06 + K21 Version Number + 0x0D + MAXQ firmware version

6.2.3. Get Serial Number

The **Get Serial Number** command retrieves the L80's serial number.

Command Body: 78 46 02

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	78 46 01	3C	C0	03
Output Hex String: 02 03 00 78 46 02 3C C0 03						

Response Body:

06 + 10 bytes ASCII code Serial Number
or
15 62 00: No Serial Number

Response Example

STX	Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02	0B	00	06 <10-digit serial number>			03
Response Hex String: 02 0B 00 06 36 31 36 54 35 36 38 39 34 32 67 39 03 <STX><len low><len high><ACK><10-byte serial number><LRC><SUM><STX> The LRC and SUM will obviously depend on the model number.						

6.2.4. Get Model Status

The **Get Model Status** command retrieves the L80's current model status.

Command Body: 78 46 20

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	78 46 20	1E	DE	03
Output Hex String: 02 03 00 78 46 20 1E DE 03						

Response Body: 06 + Model Status

Response Example

STX	Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02	0D	00	06 <model status>			03
Response Hex String: 02 0D 00 06 49 44 50 42 2D 36 30 32 34 30 30 4D 79 CB 03 <STX><len low><len high><ACK><model number><LRC><SUM><STX> In this example, the model number is IDPB-602400M.						

6.2.5. Reset

The **Reset** command performs a warm restart on the L80.

Command Body: 78 46 49

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	78 46 49	77	07	03
Output Hex String: 02 03 00 78 46 49 77 07 03						

Response Body: 06 (and LRC and SUM are 06)

Note:
- The L80 will Reset (restart; warm reboot) after it responds ACK.
- This is the Highest Priority Command in the device except for Key Loading State.

6.2.6. Get Status for Key

The **Get Status for Key** command retrieves the status for a specified key.

Command Body: 78 46 25

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	78 46 25	1B	E3	03
Output Hex String: 02 03 00 78 46 25 1B E3 03						

Response Body:

06 <2-byte Block Length><KeyStatusBlock1><[KeyStatusBlock2]>…<[KeyStatusBlockN]>
or
15 <Error Code>

Response Example

STX	Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02			06 <Block Length Low><Block Length High><KeyStatusBlock1> <[KeyStatusBlock2]>… <[KeyStatusBlockN]>			03

Response Hex String Example:

If one device supports PIN DUKPT Key, 12 PIN Master Key (Slot is 0-11), 1 PIN Session Key, PCI Pairing BDK Key (include HSM KEK DUKPT Key).

The response:
```
06 18 00  <00 00 00 00> <01 00 00 01> <02 00 00 00> <05 00 00 00>
<06 00 00 00> <08 00 00 01> <20 00 00 01> <21 00 00 00> <22 00 00 00>
<23 00 00 00> <24 00 00 00> <25 00 00 00> <26 00 00 00> <27 00 00 00>
<28 00 00 00> <29 00 00 00> <2A 00 00 00> <0A 00 00 00> <0C 00 00 01>
<0D 00 00 00> <14 00 00 01> <30 00 00 01> <31 00 00 01> <32 00 00 01>
<F0 00 00 01> <41 00 00 00>
```

Indicating that: Host PINpad Master DUKPT Key does not exist, current host PIN DUKPT Key exists, Data DUKPT Key does not exist, MAC DUKPT Key does not exist, CR-PINpad Master DUKPT Key does not exist, current host PIN Master Key (Slot 0 and Slot 1) exists, current host PIN Master Key (Slot 2~11) does not exist, PCI Pairing BDK Key does not exist, RKI-KEK (Admin DUKPT Key) exists, Pairing MSR BDK Key does not exist, HSM KEK DUKPT exists, MAC DUKPT Key exists, PIN Pairing Key exists, Data Pairing Key exists, Standard PIN Session Key exists, Desjardins PIN Session Key does not exist.

Key Name	Key Index and Key Name
Host-PINpad Master DUKPT Key	0x00
PIN DUKPT Key	0x01
Data DUKPT Key	0x02
MAC DUKPT Key	0x05
CR-PINpad Master DUKPT Key	0x06
PIN Master Key	0x08, 0x20~0x2A
PCI Pairing BDK Key	0x0A
RKI-KEK (Admin DUKPT Key)	0x0C
Pairing MSR BDK Key	0x0D
LCL-KEK (HSM DUKPT KEY)	0x14
CR-PINpad MAC DUKPT Key	0x30
PIN Pairing DUKPT Key	0x31
Data Pairing DUKPT Key	0x32
Standard PIN Session Key	0xF0

Key Name	Key Index and Key Name
Desjardins PIN Session Key	0x41

- <key slot>: 2 bytes. Range is 0: 9999 (If key has not Slot, the value is 0x00 0x00, if key slot is 1000, the value is 0x03 0xE8)
- <key status>: 1 byte:
  - o   0: Not Exist
  - o   1: Exist
- 0xFF: Key Stop (Only Valid for DUKPT Key)

6.2.7. Get Key Status

The **Get Key Status** command retrieves the status for a specified key.

Command Body: 78 46 30

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	78 46 30	0E	EE	03
Output Hex String: 02 03 00 78 46 30 0E EE 03							

Response Body: 06 + PIN DUKPT Status + PIN Master Key Status + PIN Session Key Status + Account DUKPT Key Status + Account DUKPT Key Status + RKI-KEK (Admin DUKPT Key)

Where:

Key	Status	Note
PIN DUKPT Key	0: None. 1: Exist 0xFF: STOP	
PIN Master Key	0: None 1: At least Exist a Master Key	
Standard PIN Session Key	0: None. 1: Exist	
Desjardins PIN Session Key	0: None. 1: Exist	
Account/MSR DUKPT Key	0: None. 1: Exist 0xFF: STOP	Does not support this key. Always 0
Account/ICC DUKPT Key	0: None. 1: Exist 0xFF: STOP	Does not support this key. Always 0
RKI-KEK (Admin DUKPT Key)	0: None. 1: Exist 0xFF: STOP	
Data DUKPT Key	0: None. 1: Exist 0xFF: STOP	
MAC DUKPT Key	0: None. 1: Exist 0xFF: STOP	

If the L80 has not been key-injected, the response appears in the following format:
0207000600000000000060603

6.2.8. Get Remote Key Injection Timeout

The **Get Remote Key Injection Timeout** command retrieves the L80's current RKI timeout.

Command Body: 78 52 01 01

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	78 52 01 01	2A	CC	03
Output Hex String: 02 04 00 78 52 01 01 2A CC 03						

Response Body: 06 78 01 01 02 <Timeout_H><Timeout_L>

Response Example

STX	Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02	07	00	78 52 01 01 02 00 C0	BC	42	03
Output Hex String: 02 07 00 06 78 01 01 02 00 C0 BC 42 03 In this example, the timing value is 0x00C0 (192 seconds).						

6.2.9. Set Date & Time

The **Set Date & Time** command sets the L80's date and time.

Command Body: 78 53 01 50 06 <Date Time>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	0B	00	78 53 01 50 06	39	F3	03
Output Hex String (example): 02 0B 00 78 53 01 50 06 16 05 20 10 30 56 39 F3 03						
Where: <Data Time> is 6 bytes data: Year, Month, Date, Hour, Minute, Second						

Item	Value Area (BCD Code)
Year	00~99
Month	01~12
Date	01~31
Hour	00~23
Minute	00~59
Second	00~59

Response Body: 06
Note:

- If current Date/Time is 2014/08/23 15:24:59, <Date Time> should be 14 08 23 15 24 59 (BCD Code).
- The command always valid in Activation IDLE State.
- 2000/01/01 00:00:00 is the base time; device will reject attempts to set this value.

6.2.10. Get Date & Time

The **Get Date & Time** command retrieves the L80's current date and time.

Command Body: 78 52 01 50

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	78 52 01 50	7B	1B	03
Output Hex String: 02 04 00 78 52 01 50 7B 1B 03						

Response Example

STX	Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02	0B	00	06 78 01 50 06 16 05 10 13 16 19	36	42	03
Output Hex String: 02 0B 00 06 78 01 50 06 16 05 10 13 16 19 36 42 03 Which is STX, 2 length bytes, ACK + 78 01 50 06 + <Data Time> **Where:** <Data Time> is 6 bytes data: Year, Month, Date, Hour, Minute, Second. For example: 16 05 20 10 26 01					

Note: The command is always valid in Load Important Data State & Activation IDLE State.

6.2.11. Enter Stop Mode

The **Enter Stop Mode** command sends the L80 into Stop Mode.

Command Body: 78 46 72 01

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	78 46 72 01	4D	31	03
Output Hex String: 02 04 00 78 46 72 01 4D 31 03						

Response Body: 06

Note:
1. Sends the L80 into Stop Mode. In this mode, the LCD display and backlight are off. Stop Mode reduces power consumption to the lowest possible level. Only a physical key press can wake up an L80 in Stop Mode.
2. An L80 cannot enter Stop Mode from Bootloader mode or Diagnosis mode, and cannot perform the following operations: Get PIN, Get Numeric, Get Function Key, Get PIN for Pro, Display and Get Key for Pro and Active PINpad, Activate/Deactivate Passwords, load cert, load key, and load important data for PINpad mode.

6.2.12. Set Enter Sleep Mode Time

The **Set Enter Sleep Mode Time** command sets the L80's timeout period (the period after which the L80, if idle, goes to sleep); the default is 120 seconds.

Command Body: 78 46 71 <TimeH><TimeL>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	05	00	78 46 71 <TimeH><TimeL>	62	5C	03
Output Hex String: 02 05 00 78 46 71 01 2C 62 5C 03 <TimeH><TimeL>: Enter sleep mode time. After TimeH*256+TimeL seconds, device enters Sleep Mode.						

Response Body: 06.

Note:
1. Sleep Mode is controlled by a timeout after the L80 is idle for a specified time.
2. Sleep Mode reduces power consumption to a much lower level, but the device remains capable of being woken up by key press or communication from the host.
3. Bootloader mode, Diagnosis mode, Get PIN, Get Numeric, Get Function Key, Get PIN for Pro, Display and Get Key for Pro and Active PINpad, Activate/Deactivate Passwords, load cert, load key and load important data for PINpad cannot enter sleep mode.

6.3. Bootloader Commands

When the L80 enters the Bootloader, the device is in the "Waiting State" with "Bootloader…" in Line 0 of the LCD display. In this state, the device can only receive the **Get Version** command. The expected response is the Bootloader version.

The L80 can receive the **Get Version** command and all Data Blocks commands:
- If the L80 successfully receives **Get Version** command, it respond with "Bootloader" characters.
- If the L80 successfully receives a **Data Block** command, it verifies the block data format, version, and signature.
- If verification is OK, the L80 copies the block data into the Application Area and responds **ACK**.
- If verification produces an error, the L80 responds **NAK** with an error code and waits for the block data again. If one data block continuously fails three times, the L80 erases all applications and responds **NAK** with an error code, then waits for the first data block in the Bootloader state.

If the Bootloader times out (30 seconds), and if the application is not modified, the L80 returns to the old application; otherwise the L80 erases all applications and exist in the Bootloader state.

6.3.1. Enter into Bootloader

The **Enter into Bootloader** command sets the L80 into the bootloader state.

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	78 46 7A 49 52 46 57 00 00 00 00 00 00 00 00	4E	70	03
Output Hex String: 78 46 7A 49 52 46 57 00 00 00 00 00 00 00 00						

Response Body:
06: Device has the function
15: Device does not have the function.

6.4. Other PIN Pad Group (Task) Commands

The section below details commands related to the L80's PIN pad.

6.4.1. Get Encrypted PIN

The **Get Encrypted PIN** command retrieves the encrypted PIN from the L80.

Command Body: 75 46 07 <KeyType><PAN (Account#)><LCD len><LCD Command format>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	15	00	75 46 07 01 30 34 37 36 31 37 33 39 30 30 31 30 31 30 30 31 00	3D	EB	03
Output Hex String: 02 15 00 75 46 07 01 30 34 37 36 31 37 33 39 30 30 31 30 31 30 30 31 00 3D EB 03						

Where:
- <Key Type>: 1 byte:
  - o 0x00: MKSK-TDES   External Plaintext PAN
  - o 0x01: DUKPT-TDES or AES   External Plaintext PAN
  - o 0x10: MKSK-TDES   External Ciphertext PAN
  - o 0x11: DUKPT-TDES or AES   External Ciphertext PAN

[<PAN (Account#)>]: External account:
- If PEK is TDES, 16 bytes ASCII code for digital (0x30: 0x39)
- If PEK is AES, 1 byte Len + (12~19) bytes ASCII code for digital (0x30: 0x39)

<Key Type> is 0x00 or 0x01, the PAN is Plaintext (Removal detection enable valid), 16 bytes.
<Key Type> is 0x10 or 0x11, the PAN is Ciphertext (Removal detection enable valid, Ciphertext PAN is encrypted by PAN Encryption Key from pairing, uses PAN Encryption Key as Key, use 8 bytes 0 as IV, TDES and CBC encrypt the Plaintext PAN Format (24 bytes) to get 24 bytes Encrypted PAN).
<LCD len>:1 byte. It is the length of LCD Command format.
<LCD Command format>: 1~16 bytes ASCII code Display Message.

Response Body:
- 0x06 for success, or 0x15 Error Code if is not successful.
- Waiting for PIN entry. And:
  - o If Get Encrypted PIN with DUKPT Key under Triple DES: 06 + 20 ASCII code KSN + 16 ASCII code Encrypted PIN block
  - o If Get Encrypted PIN with MKSK: 06 + 16 ASCII code Encrypted PIN block
  - o If Get Encrypted PIN with DUKPT Key under AES: 06 + 24 ASCII code KSN + 32 ASCII code Encrypted PIN block

Note:

- If Get Encrypted PIN using Plaintext PAN:
  - If the Plaintext PAN is an error, the response is 15 07 02
- If Get Encrypted PIN using encrypted PAN:
  - If there is no BDK of the Pairing MSR Key, the response is 15 07 00
  - If there is a BDK of the Pairing MSR Key, but pairing is not implemented successfully, the response is 15 07 01
- If pairing is implemented successfully, but the Encrypted PAN is an error, the response 15 07 02
  - 15 07 00: No BDK of the Pairing MSR Key
  - 15 07 01: Have BDK of Pairing MSR Key, Not Pairing with MSR (No PAN Encryption Key)
  - 15 07 02: PAN Error
  - 15 07 03: Pairing Failed
  - 15 07 04: MSR Pairing Key Other Error
- If related key was not loaded, response 15 04 00
- If PIN DUKPT Key was STOP, response 15 73 00
- The device supports both standard and Desjardins session keys, but only one of the session keys at a time. If the standard session key is loaded, the device will avoid Get PIN in 90 seconds if the Get PIN operation is successfully executed. If a Desjardins session key is loaded, the device will accept a Get PIN operation up to 120 times in an hour.
- If MKSK Get PIN operation is executed to the maximum times, the device will response 15 72 00
- Wait 30 Seconds, the PIN Len default is 4~12
- Per 20 Seconds, if the PIN length is not zero, the PIN is clear
- When a numeric key is pressed, the L80 increases the "*" displayed on the LCD if the Total PIN length is less than 12. Line 1 displays:
  - If Enter 2 numeric: **
  - If Enter 12 numeric: ************
- When the Backspace key is pressed, the L80 decreases the "*" displayed on the LCD if the Total PIN length is not 0.
- When the Cancel key is pressed, the L80 displays the cursor on the LCD if the Total PIN length is not 0, or the L80 quits the work state.
- When Cancel Command is sent, the L80 quits the work state.

6.4.2. Get Numeric with Display Message

The **Get Numeric with Display Message** command gets the numbers entered on the PIN pad and displays them on the LCD.

Command Body: 75 46 08 & <Len><Flag><Display Message String><256 bytes Signature>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	0D	01	75 46 08 08 00 41 42 43 44 45 46 47 48 83 02 FA 4B E3 15 1B 93 CD 05 9D 57 2A 88 83 3A B5 0E 73 C3 70 25 56 4E 38 77 B8 B4 F2 AF 45 65 DC 19 8A BA 9F E1 04 99 F3 82 F5 48 25 3D CB 8F 70 A9 22 B1 46 06 1A AE A4 AA 4C EB 0A BE 77 AB B9 DA 4C C5 C4 67 6E 9E AC 9A 2C 45 43 6C 5B 9C D1 8A A4 E1 FD 71 23 54 B7 7F 68 C0 52 4A 31 F5 D4 C4 6A C7 35 86 94 C0 F0 F6 39 23 9E E9 FE 53 67 A1 D4 F0 0E B3 BC 2C 51 C1 F9 5F 80 F4 98 00 A6 48 7B 12 23 ED B1 12 D5 04 3B EE 71 48 F5 B6 F8 1C 00 81 9D 6F 18 6C 69 6C C9 2D 80 02 44 5C 8B 62 9D F4 5D D7 BF F8 37 86 3C DC 19 F8 15 FC C6 E1 2E 84 91 8E 92 54 FA E0 CF 1E 95 A8 16 52 7D 0F 1C 25 3A 80 1A 55 92 AD 01 CD 6B 5B CD 7B 15 30 4C 67 01 23 2D 90 BC C6 87 2A CD 65 A2 93 93 55 CA 19 80 72 FE 84 07 95 89 3E F5 B3 0B EC 30 54 7F D7 68 B1 9E D9 A6 19 78 B6 D1 65 0A 74	29	19	03

Output Hex String: 02 0D 01 75 46 08 08 00 41 42 43 44 45 46 47 48 83 02 FA 4B E3 15 1B 93 CD 05 9D 57 2A 88 83 3A B5 0E 73 C3 70 25 56 4E 38 77 B8 B4 F2 AF 45 65 DC 19 8A BA 9F E1 04 99 F3 82 F5 48 25 3D CB 8F 70 A9 22 B1 46 06 1A AE A4 AA 4C EB 0A BE 77 AB B9 DA 4C C5 C4 67 6E 9E AC 9A 2C 45 43 6C 5B 9C D1 8A A4 E1 FD 71 23 54 B7 7F 68 C0 52 4A 31 F5 D4 C4 6A C7 35 86 94 C0 F0 F6 39 23 9E E9 FE 53 67 A1 D4 F0 0E B3 BC 2C 51 C1 F9 5F 80 F4 98 00 A6 48 7B 12 23 ED B1 12 D5 04 3B EE 71 48 F5 B6 F8 1C 00 81 9D 6F 18 6C 69 6C C9 2D 80 02 44 5C 8B 62 9D F4 5D D7 BF F8 37 86 3C DC 19 F8 15 FC C6 E1 2E 84 91 8E 92 54 FA E0 CF 1E 95 A8 16 52 7D 0F 1C 25 3A 80 1A 55 92 AD 01 CD 6B 5B CD 7B 15 30 4C 67 01 23 2D 90 BC C6 87 2A CD 65 A2 93 93 55 CA 19 80 72 FE 84 07 95 89 3E F5 B3 0B EC 30 54 7F D7 68 B1 9E D9 A6 19 78 B6 D1 65 0A 74 29 19 03

Where:
<Len>: 1 byte, is the length of Display Message String

<Flag>: 1 byte, is Display Option of Line2

> Bit0 = 0:
>> o   When a numeric key is pressed, the L80 increases the display with that number on the LCD if the Total numeric length is less than 16
>> o   When the Backspace key is pressed, the L80 decreases the display with the last number on the LCD if the Total numeric length is not 0.
>
> Bit0 = 1:
>> o   When a press numeric key is pressed, the L80 increases the display of "*" on the LCD if the Total numeric length is less than 16.
>> o   When the Backspace key is pressed, the L80 decreases the display of "*" on the LCD if the Total numeric length is not 0.

- Bit1 = 0: Output number for numeric key, 'C' for Cancel, 'E' for Enter, when key is pressed
- Bit1 = 1: Output '*' for number key, 'C' for Cancel, 'E' for Enter, when key is pressed

Bit1 setting is valid only after the output mode is set to 1. Refer the description in
<Display Message String>: 1~16 bytes, need be ASCII code.

Note: The Display Message displays in Line 1 of the LCD.

<256 bytes Signature> is the signature of <Len><Flag><Display Message String> by Secure Message RSA Key using RSA-PSS verification algorithm. This field only exists for L80 devices with LCD screens.

Response Body:
- 0x06 for success, or 0x15 Error Code if not successful.
- Waiting for Numeric entry. And 06 + n ASCII code Numeric (n is 1~16).
- For Example: enter 7 numeric keys: 2 5 7 8 9 0 6, response is 06 32 35 37 38 39 30 36.
- If the set output content command (75 46 25 01) is executed, the upper response body will not be output.

Note:
- Wait 30 Seconds, The Numeric Len is 1~16
- Per 20 Seconds, if the Numeric length was not 0, the Numeric would clear and will display a cursor on the LCD.
- When a number key is pressed, the L80 increases the numbers displayed on the LCD if the Total length is less than the MaxLen. Line 1 display:
  - o   If Enter 2 numeric (12): 12 or **
  - o   If Enter 16 numeric (1234567890123456): 1234567890123456 or ****************
- When the Backspace key is pressed, the L80 decreases the numbers displayed on the LCD if Total numeric length is not 0.

- When the Cancel key is pressed, the L80 displays the cursor on the LCD if the Total numeric length is not 0, or the L80 quits the work state.
- When the Cancel Command is sent, the L80 quits the work state.
- The response body depends on the command (75 46 25). If the related parameter is not 0, the response data is only the ASCII code for the key that has been pressed.

6.4.3. Display Message and Get Numeric Key

Command Body: 75 46 22 & <echo_flag><max_len><min_len><display message len><display message><256 bytes Signature>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	0F	01	75 46 22 00 0C 04 08 41 42 43 44 45 46 47 48 2B 9A B6 F5 A9 A1 46 33 1E E9 BF A2 19 F7 88 85 CB B3 EF B2 E5 6A 8B EA D3 BA 7E BC 42 05 41 F2 93 B1 5C D2 3A 50 91 D8 61 79 40 46 36 80 CC 46 2C EB D3 04 7C 60 3D 0B 7B 9C 0C 95 CD AB D4 D5 2F 27 A4 CA 29 4F 25 45 6C E0 18 E7 24 BC F0 B8 D0 18 76 6F 87 1D 55 E1 09 B2 62 21 6A 1D AF 37 03 2D E5 F7 E4 88 F6 FC 0C 31 2A 29 21 68 E2 8F 21 C4 EF 62 5F CB A3 FD 11 9C D0 E4 5B 80 7C F6 75 82 94 DA 35 10 67 E5 E6 2F 45 4F 25 6E E1 E3 F9 87 63 A2 7C EB 53 20 64 97 A7 75 C2 EA 3F CF F4 D1 ED 52 A4 81 E5 FF E7 A0 56 FA BD 19 D7 96 3C 9B 58 8C B6 0B 99 05 22 81 A4 C9 9F DB 11 3C 5C 6C 7B 39 34 49 62 5A 0D 3F A0 E7 14 CA A8 9B B3 68 1E 93 5F D6 6D C1 2B 35 51 9F AD 07 93 27 BB B6 1E 04 C2 E7 DF 7F 02 43 F6 07 60 73 EE 10 8F 79 01 F8 0B 5D 3E 96 C3 44 FA 58 31 0D 5A 04	A7	8D	03

```
Output Hex String: 02 0F 01 75 46 22 00 0C 04 08 41 42 43 44 45 46 47 48
2B 9A B6 F5 A9 A1 46 33 1E E9 BF A2 19 F7 88 85 CB B3 EF B2 E5 6A
8B EA D3 BA 7E BC 42 05 41 F2 93 B1 5C D2 3A 50 91 D8 61 79 40 46
36 80 CC 46 2C EB D3 04 7C 60 3D 0B 7B 9C 0C 95 CD AB D4 D5 2F 27
A4 CA 29 4F 25 45 6C E0 18 E7 24 BC F0 B8 D0 18 76 6F 87 1D 55 E1
09 B2 62 21 6A 1D AF 37 03 2D E5 F7 E4 88 F6 FC 0C 31 2A 29 21 68
E2 8F 21 C4 EF 62 5F CB A3 FD 11 9C D0 E4 5B 80 7C F6 75 82 94 DA
35 10 67 E5 E6 2F 45 4F 25 6E E1 E3 F9 87 63 A2 7C EB 53 20 64 97
A7 75 C2 EA 3F CF F4 D1 ED 52 A4 81 E5 FF E7 A0 56 FA BD 19 D7 96
3C 9B 58 8C B6 0B 99 05 22 81 A4 C9 9F DB 11 3C 5C 6C 7B 39 34 49
62 5A 0D 3F A0 E7 14 CA A8 9B B3 68 1E 93 5F D6 6D C1 2B 35 51 9F
AD 07 93 27 BB B6 1E 04 C2 E7 DF 7F 02 43 F6 07 60 73 EE 10 8F 79
01 F8 0B 5D 3E 96 C3 44 FA 58 31 0D 5A 04 A7 8D 03
```

Where:

- <echo_flag>:
    - o Bit 0 – 0: display number for numeric key on the LCD
    - o Bit 0 – 1: display "*" for numeric key on the LCD
    - o Bit 1 – 0: Output numeric for numeric key, 'C' for Cancel, 'E' for Enter, when key is pressed
    - o Bit 1 – 1: Output '*' for numeric key, 'C' for Cancel, 'E' for Enter, when key is pressed
- < max_len>: the max length for numeric display; max length cannot be beyond 16
- < min_len>: the max length for numeric display; max length cannot be less than 1
- <display message len>: 1 byte, show the length of the latter message data
- <display message>: several bytes, ASCII code, the message data that will displayed on LCD
- <256 bytes Signature> is signature generated by Secure Message RSA key using RSA-PSS verification algorithm. The Source data is from <echo_flag> to <display message>.

Response Body:

1. 0x06 for success, or 0x15 Error Code if not successful.
2. Waiting for Numeric entry. And 06 + <len><keys0><keys1>…<keys16>

For example: enter into 7 numeric keys: 2 5 7 8 9 0 6, response is 06 07 25 78 90 6F FF FF FF FF FF FF FF FF FF FF FF FF

Note:

- Wait 30 Seconds, the Numeric Len is 1~16
- Per 10 Seconds, if the Numeric length is not 0, the Numeric display would be clear and will display the cursor on the LCD.
- When a number key is pressed, the L80 increases the numeric display on the LCD if the Total length is smaller than MaxLen. Line 1 display:
    - o If Enter 2 numeric (12): 12 or **
    - o If Enter 16 numeric (1234567890123456): 1234567890123456 or ****************
- When the Backspace key is pressed, the L80 decreases the numeric display on the LCD if the Total numeric length is not 0.

- When the Cancel key is pressed, the L80 displays the cursor on the LCD if the Total numeric length is not 0, or the L80 quits the work state.
- When the Cancel Command is sent, the L80 quits the work state.

6.4.4. Display Message and Get Amount

The **Display Message and Get Amount** command displays the numeric message on the L80's LCD and gets the amount.

Command Body: 75 46 23 & <flag><max_len><min_len><display message len><display message> <256 bytes Signature>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	0F	01	75 46 23 00 0C 04 08 41 42 43 44 45 46 47 48 2B 9A B6 F5 A9 A1 46 33 1E E9 BF A2 19 F7 88 85 CB B3 EF B2 E5 6A 8B EA D3 BA 7E BC 42 05 41 F2 93 B1 5C D2 3A 50 91 D8 61 79 40 46 36 80 CC 46 2C EB D3 04 7C 60 3D 0B 7B 9C 0C 95 CD AB D4 D5 2F 27 A4 CA 29 4F 25 45 6C E0 18 E7 24 BC F0 B8 D0 18 76 6F 87 1D 55 E1 09 B2 62 21 6A 1D AF 37 03 2D E5 F7 E4 88 F6 FC 0C 31 2A 29 21 68 E2 8F 21 C4 EF 62 5F CB A3 FD 11 9C D0 E4 5B 80 7C F6 75 82 94 DA 35 10 67 E5 E6 2F 45 4F 25 6E E1 E3 F9 87 63 A2 7C EB 53 20 64 97 A7 75 C2 EA 3F CF F4 D1 ED 52 A4 81 E5 FF E7 A0 56 FA BD 19 D7 96 3C 9B 58 8C B6 0B 99 05 22 81 A4 C9 9F DB 11 3C 5C 6C 7B 39 34 49 62 5A 0D 3F A0 E7 14 CA A8 9B B3 68 1E 93 5F D6 6D C1 2B 35 51 9F AD 07 93 27 BB B6 1E 04 C2 E7 DF 7F 02 43 F6 07 60 73 EE 10 8F 79 01 F8 0B 5D 3E 96 C3 44 FA 58 31 0D 5A 04	A6	8E	03

```
Output Hex String: 02 0F 01 75 46 23 00 0C 04 08 41 42 43 44 45 46 47 48
2B 9A B6 F5 A9 A1 46 33 1E E9 BF A2 19 F7 88 85 CB B3 EF B2 E5 6A
8B EA D3 BA 7E BC 42 05 41 F2 93 B1 5C D2 3A 50 91 D8 61 79 40 46
36 80 CC 46 2C EB D3 04 7C 60 3D 0B 7B 9C 0C 95 CD AB D4 D5 2F 27
A4 CA 29 4F 25 45 6C E0 18 E7 24 BC F0 B8 D0 18 76 6F 87 1D 55 E1
09 B2 62 21 6A 1D AF 37 03 2D E5 F7 E4 88 F6 FC 0C 31 2A 29 21 68
E2 8F 21 C4 EF 62 5F CB A3 FD 11 9C D0 E4 5B 80 7C F6 75 82 94 DA
35 10 67 E5 E6 2F 45 4F 25 6E E1 E3 F9 87 63 A2 7C EB 53 20 64 97
A7 75 C2 EA 3F CF F4 D1 ED 52 A4 81 E5 FF E7 A0 56 FA BD 19 D7 96
3C 9B 58 8C B6 0B 99 05 22 81 A4 C9 9F DB 11 3C 5C 6C 7B 39 34 49
62 5A 0D 3F A0 E7 14 CA A8 9B B3 68 1E 93 5F D6 6D C1 2B 35 51 9F
AD 07 93 27 BB B6 1E 04 C2 E7 DF 7F 02 43 F6 07 60 73 EE 10 8F 79
01 F8 0B 5D 3E 96 C3 44 FA 58 31 0D 5A 04 A6 8E 03
```

Where:

- <flag>: 1 byte. If 0: output actual value (ASCII) when press numeric key, 'C' for cancel key, 'E' for enter key when key is pressed. If 1: output '*' when key is pressed.
- < max_len>: the max length for numeric; max length cannot be beyond 15
- < min_len>: the max length for numeric; max length cannot be less than 1
- <display message len>: 1 byte, show the length of the latter message data
- <display message>: several bytes, ASCII code, the message data that will displayed on LCD
- <256 bytes Signature> is signature generated by Secure Message RSA key using RSA-PSS verification algorithm. The Source data is from <Flag> to <display message>.

Response Body:

1. 0x06 for success, or 0x15 Error Code if not successful.
2. Waiting for entering Numeric. And 06 + <len><keys0><keys1>...<keys14>

For example: enter into 7 numeric keys: 2 5 7 8 9 0 6, amount is 25789.06, response is 06 07 25 78 90 6F FF FF FF FF FF FF FF FF FF FF FF FF FF

Note:

- Wait 30 Seconds, the Numeric Len is 1~16
- Per 10 Seconds, if the Numeric length is not 0, the Numeric display clears and displays the cursor on the LCD.
- When a number key is pressed, the L80 increases the numeric display on the LCD if the Total length is smaller than MaxLen. Line 1 display:
  - If Enter 2 numeric (12): 0.12
  - If Enter 15 numeric (12345678901245): 1234567890123.45
- When the Backspace key is pressed, the L80 decreases the numeric display on the LCD if the Total numeric length is not 0.
- When the Cancel key is pressed, the L80 displays the cursor on the LCD if the Total numeric length is not 0, or the L80 quits the work state.
- When the Cancel Command is sent, the L80 quits the work state.

6.4.5. Get Function Key

The **Get Function Key** command retrieves the function key pressed on the PIN pad.

Command Body: 75 46 0B

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	75 46 0B	38	C6	03
Output Hex String: 02 03 00 75 46 0B 38 C6 03						

Response Body: 06 + 1 byte ASCII code Func Key or 2 bytes ASCII code Func Key.

Note:

- Wait 3 minutes.
- When the Cancel key is pressed, the L80 Sends "C"
- When the Enter key is pressed, the L80 Sends "E"
- When the F1, F2, or F3 keys are pressed, the L80 Sends "F1", "F2", or "F3"

6.4.6. Cancel Command

The **Cancel** command cancels one of the following operations on the L80: **Get Func Key**, **Get Encrypted PIN**, **Get Numeric**, and **Get Amount**.

Command Body: 75 46 09

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	75 46 09	3A	C4	03
Output Hex String: 02 03 00 75 46 09 3A C4 03						

Response Body: Always 15 18 00

6.4.7. Set PIN Len

The **Set PIN Len** command sets the L80's expected PIN length.

Command Body: 75 53 01 01 02 MinLen MaxLen

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	07	00	75 53 01 01 02 MinLen MaxLen			03
Output Hex String: 02 07 00 75 53 01 01 02 04 0A 2A DA 03 MinLen need be 4~12 MaxLen need be 4~12 MinLen need be same or less than MaxLen						

Response Body: 06

6.4.8. Get PIN Len

The **Get PIN Len** command retrieves the L80's currently set PIN length.
Command Body: 75 52 01 01

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	75 52 01 01	27	C9	03
Output Hex String: 02 04 00 75 52 01 01 27 C9 03						

Response Body: 06 75 01 01 02 MinLen MaxLen

6.4.9. Set Numeric Len

The **Set Numeric Len** command sets the L80's expected numeric length.

Command Body: 75 53 01 02 02 MinLen MaxLen

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	07	00	75 52 01 02 02< MinLen><MaxLen>	3E	E4	03
Output Hex String: 02 07 00 75 52 01 02 02 08 10 3E E4 03 MinLen need be 1~16 MaxLen need be 1~16 MinLen need be same or less than MaxLen						

Response Body: 06

6.4.10. Get Numeric Len

The **Get Numeric Len** command retrieves the L80's currently set numeric length.

Command Body: 75 52 01 02

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	75 53 00	24	CA	03
Output Hex String: 02 04 00 75 52 01 02 24 CA 03						

Response Body: 06 75 01 02 02 MinLen MaxLen

6.4.11. Default PIN Pad Group All Setting

The **Default PIN Pad Group All Setting** command resets the L80's PIN pad group settings back to the default configuration.

Command Body: 75 53 00

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	75 53 00	26	C8	03
Output Hex String: 02 03 00 75 53 00 26 C8 03						

Response Body: 06

The following settings will be reset to their default values:

Function Name	Default Value
PIN Length	Min is 4, Max is 12
Numeric Length	Min is 1, Max is 16

6.4.12. Review PIN Pad Group All Setting

The **Review PIN Pad Group All Setting** command retrieves the current PIN pad group settings for review.

Command Body: 75 52 00

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	75 52 00	27	C7	03
Output Hex String: 02 03 00 75 52 00 27 C7 03						

Response Body: 06 75 02 01 02 <Min PIN Length><Max PIN Length> 02 02 <Min Numeric Length><Max Numeric Length>

6.4.13. Manual PAN Entry Support

The **Manual PAN Entry Support** command sets the PAN information the user enters during a transaction.

Command Body: 75 46 06 <Para>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	75 46 06 07	32	C8	03
Output Hex String: 02 04 00 75 46 06 07 32 C8 03						

Where:

Para is 1 byte.

Bit	0	1
Bit0	User does not input CVV data.	User inputs CVV data.
Bit1	User does not input ADR data.	User inputs ADR data.
Bit2	User does not input ZIP data.	User inputs ZIP data.

Response Body:

- If a related key (Data key or MAC key) was not loaded, the response is 15 04 00.
- If a Data DUKPT Key was STOP, the response is 15 73 00.
- Upon command execution, the device first displays "Enter PAN" and waits for the user to enter PAN Data. The format is: (Pre-PAN and Post-PAN is default value), which the LCD displays when the user enters data: (The Pre-PAN and Post-PAN Len default is four). The whole pan data length is between 12~19:

      111
      1111****
      1111********1111

- If the user presses **Enter**, the device displays "Enter Valid Date" and waits for the user to enter date data. All four bytes should be entered, which the LCD displays on entry:

      MM/YY
      11/YY
      11/18

- If the user presses **Enter**, due to command parameters the L80 outputs "Enter CVV" and waits for the user to enter CVV data. The data length is three or four and is masked with "*".
- If the user presses **Enter** after entering CVV data, due to command parameters the L80 outputs "Enter Address" and waits for the user to enter ADR data. The data length is 0 or 20 and output in plaintext. The user can also press **Enter** to go on to the next step if no data is entered.
- If the user presses **Enter** after entering ADR data, due to command parameters the L80 outputs "Enter ZIP code" and waits for the user to enter ZIP data. The data length is 0 or 20 and output in plaintext. The user can also press **Enter** to go to the next step if no data is entered.
- The PAN data input process waits three minutes and other data input processes wait one minute.
- Per 20 Seconds, if the PAN length is not zero, the PAN is clear.

- If the user presses **Cancel**, the L80 displays a cursor on the LCD if the total PIN length is not 0, or L80 quits the work state.
- When the Cancel command is sent or the user presses **Cancel**, the L80 quits the work state.
- The port outputs key information during the whole operation. During the steps in which the user enters PAN and CVV, the output displays as '*' when numeric keys are pressed; plaintext data is displayed during the other three steps. **Cancel** and **Enter** output is displayed as 'C' and 'E'.

6.4.14. Real Time Key Press Support

This command sets output data content for the **Get PIN**, **Get Numeric Key**, and **Get Amount** commands.

Command Body: 75 46 25 & <1-byte parameter>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	75 46 25 07	11	E7	03
Output Hex String: 02 04 00 75 46 26 07 11 E7 03						

Where:

Bits	Description
bit 7	0: Device will output "06 57 46 50 47" Hex data when a key is pressed. 1: Device will not output any key event.
bit 6 ~ bit 3	Reserved
bit 2	0: When the **Get PIN from Host** command is executed, the device output follows the configuration of bit 7; the L80 outputs the encrypted PIN block when the Enter Key is pressed. 1: When the **Get PIN from Host** command is executed, the L80 outputs the related ASCII code data when a key is pressed ('0~9','B','C','E') and sends the encrypted PIN block when the Enter Key is pressed.

Bits	Description
bit 1	0: When the **Get PIN from CR** command is executed, the L80 will not output any key event when a key pressed (a requirement for the Spectrum Pro/VP5300) and outputs the encrypted PIN block when the Enter Key is pressed. 1: When the **Get PIN from CR** command is executed, the L80 outputs the related ASCII code data when a key is pressed ('0~9','B','C','E') and sends the encrypted PIN block when the Enter Key is pressed.
bit 0	0: When the **Get Numeric/Get Amount** command is executed, the device output follows the configuration of bit 7; the L80 outputs the whole numeric key sequence when the Enter Key is pressed. 1: When **Get Numeric/Get Amount** command is executed, the L80 outputs the related ASCII code data when a key is pressed ('0~9','B','C','E') and will not output the whole numeric key sequence when the Enter Key is pressed.

Note:
1. If the Cancel Key is pressed when no digits have been entered:
   a. A **Get PIN from Host/Get Numeric/Get Amount** command will always get a response of 15 19 00
   b. A **Get PIN from Pro** command will always respond 06 56 46 AE 00 00 (a requirement for the Spectrum Pro).
2. If the Enter Key is pressed when less than minimum valid digits entered, **Get PIN from Host** and **Get PIN from Pro** commands will respond with nothing when output is enabled and will respond with 06 57 46 50 when output is disabled.

6.5. Beeper Control commands

The section below details commands that control the L80's beeper.

6.5.1. Open / Close Beeper

The **Open / Close Beeper** command turns the beeper on and off.

Command Body: 75 46 01 01 <On/Off>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	05	00	75 46 01 01 01	32	BE	03
Output Hex String: 02 05 00 75 46 01 01 01 32 BE 03						

- 0x00: Off
- 0x01: On

6.5.2. Beep According to Frequency and Duration

The **Beep According to Frequency and Duration** command sets a beep by specified parameters.

Command Body: 75 46 01 02 <Fre1><Fre2><Fre3><Fre4><Dur1><Dur2><Dur3><Dur4>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	0C	00	75 46 01 02 45 38 30 33 43 38 30 30	35	79	03
Output Hex String: 02 0C 00 75 46 01 02 45 38 30 33 43 38 30 30 35 79 03						

- <Fre1><Fre2> is the first and second nibble for the first byte of Frequency.
- <Fre3><Fre4> is the first and second nibble for the second byte of Frequency.

If the Frequency is 1000 (0x03E8), <Fre1><Fre2><Fre3><Fre4> will be 0x45 0x38 0x30 0x33.

The L80's beeper follows the following specifications:
- Frequency is more than 1000Hz and less than 20000Hz. 4000Hz tone will generate the First Max Decibels sound.
- 6000Hz tone will generate the Second Max Decibels sound.
- <Dur1><Dur2> is the first and second nibble for the first byte of Duration.

- <Dur3><Dur4> is the first and second nibble for the second byte of Duration.
- If the Duration is 200 (0x00C8), <Fre1><Fre2><Fre3><Fre4> will be 0x43 0x38 0x30 0x30. Duration need be more than 16ms and less than 65535 ms.

Response:
- If the Beeper is Off, the response 15.
- If the Beeper is On:
  - If the Frequency is correct, the response 06. If Frequency is incorrect, the response 15.

6.6. LCD Group (Task) commands

The section below details commands controlling the L80's LCD.

6.6.1. Clear Display

The **Clear Display** command clears the L80's LCD.

Command Body: 8A 46 01 <Control>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	0C	00	8A 46 01 <Control>	EA	46	03
Output Hex String: `02 04 00 8A 46 01 FF 32 D0 03` <Control> 0: First Line 1: Second Line 0xFF: All Screen						

Response Body: 06

6.6.2. Save Prompt Display

The **Save Prompt Display** command saves a specified prompt (0-9) and a 16-character message.

Command Body: 8A 46 24 <Prompt><Message>

Where:
- <Prompt>: Prompt number 0-9
- <Message>: Display message 16 char MAX ((ASCII Code: 0x20~0x7F))

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	0C	00	8A 46 24 <Prompt><Message>	EA	46	03
Output Hex String: 02 0C 00 8A 46 24 02 2A 2A 2A 2A 2A 2A 2A 2A EA 46 03 Example shows Prompt 2, Message "********"						

Response Body: 06

6.6.3. Display Prompt

The **Display Prompt** command displays a specified prompt.

Command Body: 8A 46 25 <Line><Prompt>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02		00	8A 46 25 <Line><Prompt>			03
Output Hex String: 02 05 00 8A 46 25 00 01 E8 F6 03						

Response Body: 06

6.6.4. Display Message

The **Display Message** command displays a specified 16-character message.

Command Body: 8A 46 26 <Line><1~16 Message>

Where:
- <Line>: Display line number 0 or 1
- <1~16 Message >: Message (ASCII Code: 0x20~0x7F)

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	17	00	8A 46 26 <Line><1~16 Message>	D2	F6	03
Output Hex String: 02 17 00 8A 46 26 00 53 6D 61 72 74 50 49 4E 20 4C 31 30 30 20 52 65 61 64 79 D2 F6 03						

Where:
- <Line>: Display line number 0 or 1
- <1~16 Message >: Message (ASCII Code: 0x20~0x7F)

The example above sets the message "SmartPIN L80 Ready"

Response Body: 06

6.6.5. Default LCD Group All Setting

The **Default LCD Group All Setting** command resets all the L80's LCD settings to their defaults.

Command Body: 8A 53 00

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	8A 53 00	D9	DD	03
Output Hex String: 02 03 00 8A 53 00 D9 DD 03						

Response Body: 06

Default values:

Function Name	Default Value
Backlight of LDC On/Off	Off

6.6.6. Review LCD Group All Setting

The **Review LCD Group All Setting** command retrieves the current L80's current LCD settings.

Command Body: 8A 52 00

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	03	00	8A 52 00	D8	DC	03
Output Hex String: 02 03 00 8A 52 00 D8 DC 03						

Response Body: 06 8A 04 01 <Back Light Control>

Response Example

STX	Len Low	Len High	Response Body	LRC	CHK SUM	ETX
02	05	00	06 8A 04 01 <Back Light Control>05 01 <TimerValue>	88	96	03
Output Hex String: 02 05 00 06 8A 04 01 01 88 96 03						

6.6.7. Set Back Light of LCD On/Off

The **Set Back Light of LCD On/Off** command controls the L80's LCD backlight.

Command Body: 8A 53 01 04 01 <Control>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	06	00	8A 53 01 04 01 01	DC	E4	03
Output Hex String: 02 06 00 8A 53 01 04 01 01 DC E4 03						

Where:
<Control>:
- 0: OFF
- 1: ON

Response Body: 06

6.6.8. Get Back Light of LCD On/Off

The **Get Back Light of LCD On/Off** command retrieves the current on/off state for the L80's LCD backlight.

Command Body: 8A 52 01 04

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	8A 52 01 04	DD	E1	03
Output Hex String: 02 04 00 8A 52 01 04 DD E1 03						

Response Body: 06 8A 01 04 01 <Control>

6.7. RS-232 Task Commands

The section below details commands that control the L80's RS-232 port.

6.7.1. Set BaudRate

The **Set BaudRate** command sets the L80's BaudRate.

Command Body: 70 53 01 41 01 <ASCIIChar>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	06	00	70 52 01 41 01 <Speed>	54	3C	03
Output Hex String: 02 06 00 70 53 01 41 01 36 54 3C 03 This example shows Speed as 0x36, the code for 19200 (see table below).						

BaudRate	ASCIIChar
2400	0x32
4800	0x33
9600	0x34
19200	0x36
38400	0x37
115200	0x39

Response Body: 06

6.7.2. Get BaudRate

The **Get BaudRate** command retrieves the L80's current BaudRate.

Command Body: 70 52 01 41

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	70 52 01 41	62	04	03
Output Hex String: 02 04 00 70 52 01 41 62 04 03							

Response Body: 06 70 41 01 <ASCIIChar>

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	05	00	06 70 41 01 <Speed>	01	EF	03
Output Hex String: 02 05 00 06 70 41 01 37 01 EF 03							

BaudRate	ASCIIChar
2400	0x32
4800	0x33
9600	0x34
19200	0x36
38400	0x37
115200	0x39

6.7.3. Set StopBits

The **Set StopBits** command sets the L80's StopBits.

Command Body: 70 53 01 45 01 ASCIIChar

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	06	00	70 53 01 45 01 31	57	3B	03
Output Hex String: 02 06 00 70 53 01 45 01 31 57 3B 03						

StopBits	ASCIIChar
1	0x31
2	0x32

Response Body: 06

6.7.4. Get StopBits

The **Get StopBits** command retrieves the L80's currently set StopBits.

Command Body: 70 52 01 45

Command Example

STX	Len Low	Len High	Command Body	LRC	CHK SUM	ETX
02	04	00	70 52 01 45	66	08	03
Output Hex String: 02 04 00 70 52 01 45 66 08 03						

Response Body: 06 70 45 01 + <ASCIIChar>

7. Error Codes

Error Code	Definition
0x0100	Log is full
0x0400	Related Key was not loaded
0x0500	Key Same
0x0501	Key is all zero
0x0502	TR-31 format error
0x0700	No BDK of Pairing MSR Key
0x0701	Have BDK of Pairing MSR Key, Not Pairing with MSR (No PAN Encryption Key)
0x0702	PAN is Error
0x0703	Pairing Failed
0x0704	MSR Pairing Key Other Error
0x0705	No Internal MSR PAN (or Internal MSR PAN is erased timeout)
0x0F00	Encryption or Decryption Failed
0x1800	Response for Cancel (Get PIN, Get Numeric, Get FunKey) command
0x1900	Response for Cancel Key Press in Get PIN / Numeric State
0x3005	Removal detection not active
0x30FF	Slave Chip is not connected
0x5000	Invalid Certificate
0x5001	Certificate is existed
0x5500	No RKI-KEK (Admin DUKPT Key)
0x5501	RKI-KEK (Admin DUKPT Key) STOP
0x5504	Validate Authentication Code Error
0x5505	Encrypt or Decrypt data failed
0x5506	Not Support the New Key Type
0x5507	New Key Index is Error
0x5508	Step Error
0x5509	Remote Key Injection Timeout (Latest Command is Timeout)
0x550A	MAC Error
0x550B	Key Usage Error
0x550C	Mode of Use Error
0x550F	Other Error
0x6000	Save or Config Failed / or Read Config Error
0x6200	No Serial Number
0x6900	Invalid Command: Protocol is right, but task ID is invalid
0x6A00	Unsupported Command: Protocol and task ID are right, but command is invalid
0x6A01	Unsupported Command: Protocol and task ID are right, but command is invalid: In this State
0x6B00	Unknown parameter in command: Protocol task ID and command are right, but parameter is invalid
0x6C00	Unknown parameter in command: Protocol task ID and command are right, but length is out of the requirement.

Error Code	Definition
0x7200	MKSK Suspend or press passwords Error Suspend
0x7300	PIN/MSR/ICC/ RKI-KEK (Admin DUKPT Key) is STOP (21 bit 1)
0x7400	Device is Busy
0x7500	Device is in diagnose mode
0x7600	Device is in Transparent Transmission mode
0x8100	Timeout
0x8200	Wrong operate step
0x9031	Unknown command
0x9032	Wrong parameter (In key loading process)
0x9042	Invalid HSM DUKPT Key
0x9043	Invalid MAC DUKPT Key
0x9044	Invalid PIN DUKPT Key
0x9045	Invalid PCI Pairing BDK Key
0x9046	Invalid DATA DUKPT Key
0x9047	Do not support this key
0x9053	Invalid Pairing BDK key
0x9051	Duplicate key detected
0x9052	Invalid Admin DUKPT Key
0x9054	TR31 check failed

8. LCD Foreign Language Mapping Table

ID	Message ID Mapping	English 0x454E		Japanese/日本語 0x4A41	
		Line 1	Line 2	Line 1	Line 2
0	MSG_NEW_NULL				
1	MSG_NEW_AMOUNT	AMOUNT:		金額:	
2	MSG_NEW_AMOUNT_OK	AMOUNT OK?		金額を	確認して下さい
3	MSG_NEW_APPROVED	APPROVED		処理が	完了しました
4	MSG_NEW_CALL_YOUR_BANK	CALL YOUR BANK		カード会社に	連絡して下さい
5	MSG_NEW_CANCEL_OR_ENTER	CANCEL OR ENTER		暗証番号入力	またはキャンセル
6	MSG_NEW_CARD_ERROR	CARD ERROR		カードが	読めませんでした
7	MSG_NEW_DECLINED	DECLINED		処理が	できませんでした
8	MSG_NEW_ENTER_AMOUNT	ENTER AMOUNT		金額を	入力して下さい
9	MSG_NEW_ENTER_PIN	PLEASE ENTER PIN		暗証番号を	入力して下さい
10	MSG_NEW_INCORRECT_PIN	PIN DECLINED		暗証番号が	間違っています
11	MSG_NEW_INSERT_SWIPE_CARD	INSERT/SWIPE	CARD	カードを差し込む	またはスライド
12	MSG_NEW_CARD	CARD		カード	
13	MSG_NEW_INSERT_CARD	INSERT CARD		カードを	差し込んで下さい
14	MSG_NEW_USE_CHIP_READER	USE CHIP READER		カードを	差し込んで下さい
15	MSG_NEW_NOT_ACCEPTED	NOT ACCEPTED		処理が	できませんでした
16	MSG_NEW_PIN_OK	PIN APPROVED		暗証番号を	確認しました
17	MSG_NEW_PLEASE_WAIT	PLEASE WAIT...		しばらく	お待ち下さい
18	MSG_NEW_PROCESSING_ERROR	PROCESSING ERROR		処理エラー	
19	MSG_NEW_USE_MAGSTRIPE	USE MAGSTRIPE		カードをスライド	して下さい
20	MSG_NEW_TRY_AGAIN	TRY AGAIN		もう一度	お願いします
21	MSG_NEW_AUTHORIZING	AUTHORIZING...		処理中です	
22	MSG_NEW_TRANSACTION_ERROR	TRANSACTION	ERROR	トランザクション	エラー
23	MSG_NEW_TERMINATED	TERMINATED		処理が	できませんでした
24	MSG_NEW_ADVICE	ADVICE		処理が	できませんでした
25	MSG_NEW_TIMEOUT	TIMEOUT		タイムアウト	しました
26	MSG_NEW_PROCESSING	PROCESSING...		処理中です	
27	MSG_NEW_PIN_TRY_LIMIT_EXCEEDED	PIN TRY LIMIT EX		暗証番号入力上限	を超過しました
28	MSG_NEW_ISSUER_AUTH_FAILED	ISSUER AUTH FAIL		このカードは	使用できません
29	MSG_NEW_CONTINUE_PROCESS	CONTINUE PROCESS		処理を続けます	
30	MSG_NEW_GET_PIN_ERROR	GET PIN ERROR		暗証番号取得	エラー
31	MSG_NEW_GET_PIN_FAILED	GET PIN FAIL		暗証番号取得	エラー
32	MSG_NEW_NOKEY_GET_PIN	NO KEY GET PIN		暗号鍵が	ありません
33	MSG_NEW_CANCELLED	CANCELED		キャンセル	しました
34	MSG_NEW_LAST_PIN_TRY	LAST PIN TRY		暗証番号をどうぞ	(あと 1 回まで)

9. Troubleshooting

The SmartPIN L80 PIN Pad is designed to be reliable and easy to troubleshoot. The components that may require troubleshooting include the power module (if applicable), the reader, and the serial cable.

Symptom	Possible Cause	Remedy
The L80 not activated		
The L80 is in the de-activated state (LED is red, device beeping quickly)	• The firmware needs to be downloaded for the first time. • Physical tamper is triggered (device is not assembled). • Battery is out of power.	• Check to make sure the device is fully assembled. • Use USDK-PKI to activate device.
LCD shows "Load Cert" (LED is red, device beeping slowly)	Activation process is not complete.	Use USDK-PKI to activate the device.
The L80 not working with VP5300		
Card Reader cannot request a Get PIN operation from the L80	The L80 is not paired with card reader; the encrypted data from card reader cannot be decrypted successfully.	• When the L80 connects with the card reader for the first time, the card reader should run the pairing command to load keys to the L80. • When the L80 is connected to the card reader, the user should enter the pairing key sequence to pair the two devices.

General Issues		
L80 does not appear to be powered on (no LCD or LEDs are lit)	• Reader not powered on or using incorrect voltage. • Improper use of internal power supply provided for the VP5300.	• Check cable connections or replace with a known-good cable. • Verify that power is on and correct voltage and current are present. • Make sure that the power provided is within the specified range of the L80 PIN pad. • For more information, refer to Input Voltage information under the Electrical specification section. • Replace the L80 with a known-good device to verify that the power supply and wiring in the installation are sound.

If you are unable to resolve the problem, please contact support@idtechproducts.com (sending an e-mail to this address will automatically open a support ticket).

10. For More Information

- To learn more about the SmartPIN L80 and other ID TECH products, visit the ID TECH Knowledge Base.

- Visit us online at http://idtechproducts.com.

- Find more Tech Support resources at the ID TECH Tech Support home page or send an email describing any issues to support@idtechproducts.com.