



# SmartPIN L80 User Manual

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ID TECH  
10721 Walker Street  
Cypress, CA 90630  
Voice: (714) 761-6368 Fax: (714) 761-8880

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### Revision History

| Date       | Rev | Changes                                                                                                                                                                                                                                                                        | By |
|------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 11/10/2021 | A   | <ul style="list-style-type: none"><li>• Initial Release</li></ul>                                                                                                                                                                                                              | CB |
| 03/15/2022 | B   | <ul style="list-style-type: none"><li>• Bootloader Function<ul style="list-style-type: none"><li>◦ Updated baud rate.</li></ul></li><li>• Removed Set Remote Key Injection Timeout command.</li><li>• Updated the keys pressed/sent by the Get Function Key command.</li></ul> | CB |
| 11/11/2022 | C   | <ul style="list-style-type: none"><li>• Corrected typo in the Set BaudRate command.</li></ul>                                                                                                                                                                                  | CB |
| 08/14/2023 | D   | <ul style="list-style-type: none"><li>• Updated external links.</li></ul>                                                                                                                                                                                                      | CB |
| 07/02/2024 | E   | <ul style="list-style-type: none"><li>• Added Avoiding Device Tamper Issues section.</li></ul>                                                                                                                                                                                 | CB |
| 06/24/2025 | F   | <ul style="list-style-type: none"><li>• Added Decommissioning PCI-Certified Products section.</li></ul>                                                                                                                                                                        | CB |

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# 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-adaptor in RS-232 mode |
| Power Consumption      | Run mode: <200 mA<br>Sleep mode: 2.5 mA<br>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<sup>1</sup>: <8 seconds.

### 2.1. LED Specifications

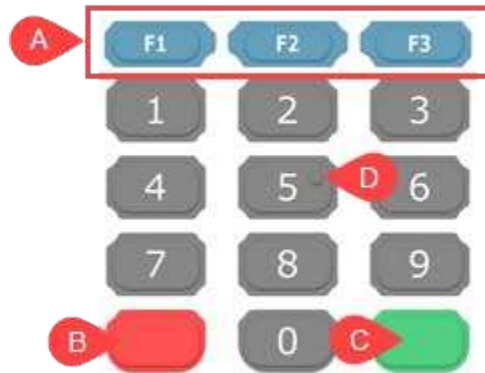
There is one tricolor (red, yellow, green) LED on the back of the L80 to display unit status. Looking at the back of the L80, with the top (LCD end) up, the LED is on the left side.

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](#).

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<sup>1</sup> 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.

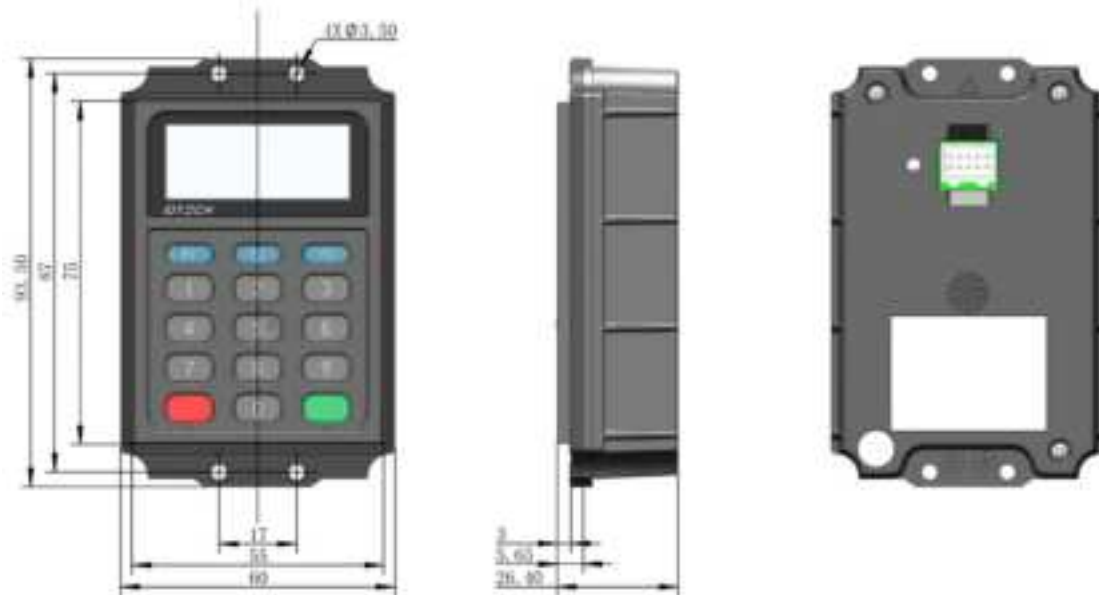
## 2.2. Keypad Specifications



**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 ( $<2.5\text{mA}$  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 ( $<1\text{mA}$ ). 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*

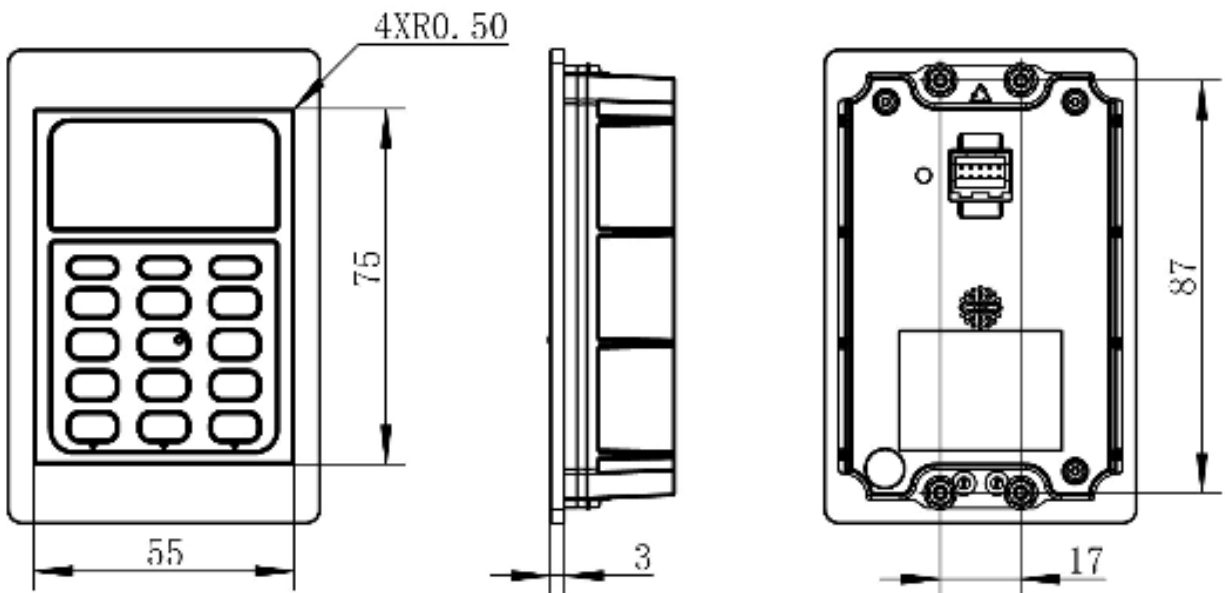
6. Observe the LCD, LED, and buzzer, and make sure the device is not in tamper mode. If the device is in tamper mode, the device behavior is:

|               | SmartPIN L80 w/o LCD | SmartPIN L80 w/ LCD |
|---------------|----------------------|---------------------|
| <b>LCD</b>    | N/A                  | Fatal Error         |
| <b>Buzzer</b> | Buzzing noise        | Buzzing noise       |
| <b>LED</b>    | 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<br>Low | Len<br>High | Command Body                       | LRC | CHK<br>SUM | ETX |
|--------------------|------------|-------------|------------------------------------|-----|------------|-----|
| 02                 |            | 00          | 75 46 10 00 + [20 bytes ASCII KSN] |     |            | 03  |
| Output Hex String: |            |             |                                    |     |            |     |

#### Response Example

| STX                                                                                                                                                                                                      | Len<br>Low | Len<br>High | Response Body                                                                                               | LRC | CHK<br>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:<br>06 + [80 bytes TR-31 Block Version B Encrypted PAN Encryption Key] or 15 07 00: No BDK of Pairing MSR Key, Or<br>15 07 03: Pairing Failed, Or<br>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<br>Low | Len<br>High | Command Body                                             | LRC | CHK<br>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

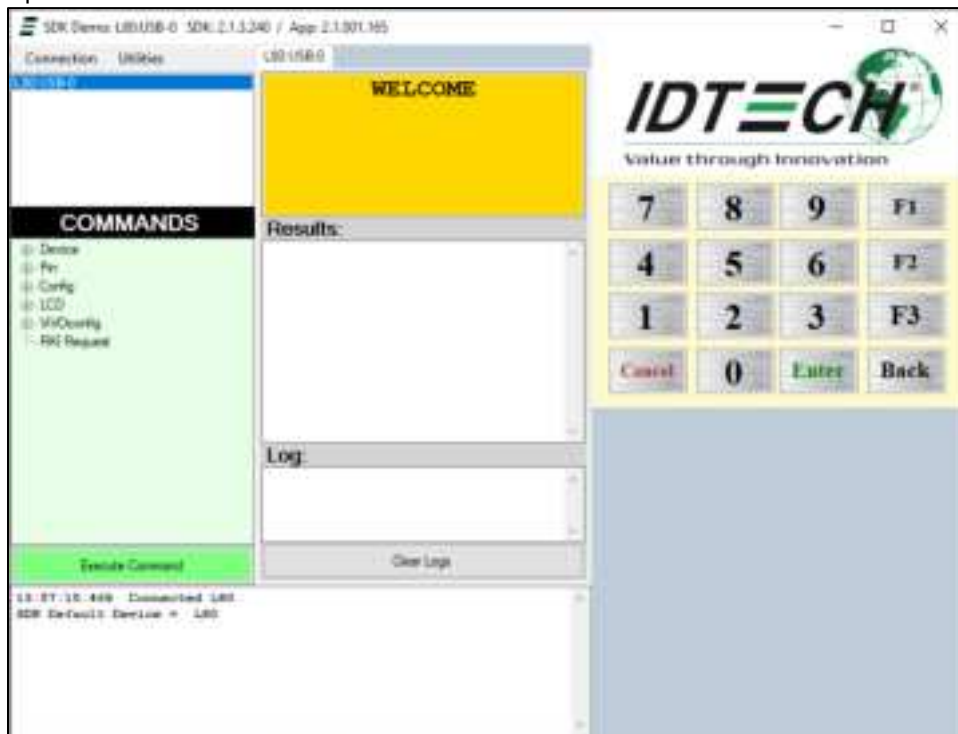
#### 4.5. Updating L80 Firmware via Serial-to-USB cable

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

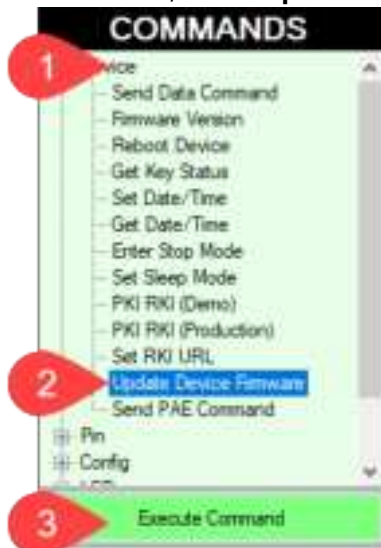
**Note:** Before you begin, contact your ID TECH representative to receive the most recent L80 firmware. Download the ZIP file and extract it to your computer.

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 <b>PK, FK, CV, NK,</b> and <b>DTV</b>                                                                                | <b>Line0:</b> Fatal Error<br><b>Other line:</b><br>Starting/Battery/BAT&Tamper/FirmwareCheck/Tamper/Other<br><br>The second line describes the cause of de-activation | Fast beeping              | Steady Red                                                                                                                                                                                    |
| Load Important Data State | Need to load <b>PK, FK, CV, NK,</b> and <b>DTV</b>                                                                      | Load Check Value & Related Key                                                                                                                                        | Slow beeping              | Steady Red                                                                                                                                                                                    |
| Activation1               | Activation <b>PK, FK, CV, NK,</b> and <b>DTV</b> loaded successfully<br>No DUKPT Key or Master Key                      | Ready                                                                                                                                                                 | Not beeping               | <ul style="list-style-type: none"> <li>• If legally in Install State: Steady Orange</li> </ul>                                                                                                |
| Load Key State            | Activation <b>PK, FK, CV, NK,</b> and <b>DTV</b> loaded successfully<br>Unit prepared to load DUKPT Key or Master Key   | Refer to<br>XX DUKPT Key<br>Loading ... Master Key<br>Loading...                                                                                                      | Refer to Key Loading Note | <ul style="list-style-type: none"> <li>• If legally in Install State: Steady Orange</li> </ul>                                                                                                |
| Suspend for Get PIN       | Activation <b>PK, FK, CV, NK</b> and <b>DTV</b> loaded successfully<br><br>GET PIN more than 120 times per hour by MKSK | <b>Line0:</b> SUSPEND<br><b>Other lines:</b> Get PIN<br><br>Other lines describe the cause to suspend                                                                 | Not beeping               | <ul style="list-style-type: none"> <li>• If not set user passwords: Blink Yellow</li> <li>• If set user passwords: Steady Yellow</li> <li>• If legally Install State: Steady Green</li> </ul> |

| Device State | Definition                                                                                                                             | LCD Display Message | Beeper State | LED auxiliary indicator                                                                                                                                                                                                                        |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Activation2  | Activation<br><b>PK, FK, SCV, NK,</b> and <b>DTV</b><br>loaded successfully<br>At least DUKPT Key<br>or MKSK is loaded<br>successfully | Ready               | Not beeping  | <ul style="list-style-type: none"> <li>• If not set user passwords: Blink Yellow</li> <li>• If set user passwords: Steady Yellow</li> <li>• Blinking Green after loading LCL-KEK</li> <li>• Steady Green after loading PIN/DATA key</li> </ul> |

## 5.2. Other LCD State for PIN function

| State                   | LCD Display Message                                                                                                                                                                                                                                                  | Note                                                             |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Checking Firmware       | Firmware Checking...                                                                                                                                                                                                                                                 |                                                                  |
| Get Encrypt PIN         | Line 0:xxxxxxx<br>Line 1:xxxxxxx                                                                                                                                                                                                                                     |                                                                  |
| Get Numeric             | Line 0:xxxxxxx<br>Line 1:xxxxxxx                                                                                                                                                                                                                                     | The Message and Plaintext Numeric Display is defined by Command. |
| Get Numeric             | Line 0:xxxxxxx<br>Line 1:xxxxxxx                                                                                                                                                                                                                                     | The Message and Star Display is defined by Command.              |
| Suspend                 | Line 0: SUSPEND<br>Line1: PWD ERR                                                                                                                                                                                                                                    |                                                                  |
| Modify default password | Please input one password<br>*****<br><br>Please input new password<br>*****<br><br>Please input new password again<br>*****<br><br>Please input another password<br>*****<br><br>Please input new password<br>*****<br><br>Please input new password again<br>***** | Modify two groups' default passwords to user passwords.          |
| Checking Firmware       | Firmware Checking...                                                                                                                                                                                                                                                 |                                                                  |
| Get Encrypt PIN         | Line 0:xxxxxxx<br>Line 1:xxxxxxx                                                                                                                                                                                                                                     |                                                                  |
| Suspend                 | Line 0: SUSPEND<br>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                                |
|----------------------------|-------------------------------------------|---------------------------------------------------|
| <b>LED</b>                 | Solid Red                                 | Solid Red                                         |
| <b>LCD Display Message</b> | Line 0: "Fatal Error"<br>Line 1: "Tamper" | Line 0: "Fatal Error"<br>Line 1: "Firmware Check" |
| <b>Buzzer (built in)</b>   | Alarm Tone                                | Alarm Tone                                        |

### 5.5. Avoiding Device Tamper Issues

All ID TECH PCI-certified devices integrate tamper switches and disable the card reader when it has been compromised. The section below describes best practices when handling PCI-secure devices to help prevent triggering the tamper switches.

Note that following these guidelines does not guarantee a device will not tamper if inadvertently mishandled or breached. User-induced tamper events will incur repair fees, key injection fees, and shipping both to and from ID TECH, regardless of warranty status.

### **5.5.1. Device Handling Best Practices**

- Do not excessively shake the reader.
- Do not drop the reader.
- Do not strike the reader.
- Do not attempt to twist or cause any torsion to the reader.
- Do not expose the reader to extreme heat or cold.
- Do not intentionally subject the reader to electrical shocks.
- Do not submerge the reader in liquids of any type for extended time.
- Do not attempt to open the reader.
- Do not provide power to the reader until all connectors are plugged into the unit.
- Check the device manual to ensure the reader receives the correct power voltage. Providing power to wires and connectors before plugging them into the device may cause power spikes that can trigger a tamper event.
- When working with or installing the reader, minimize exposure to static electricity.

### **5.5.2. ID TECH Support**

In the event the reader does tamper when under warranty, report the tampered device to ID TECH to troubleshoot and, if needed, be returned to ID TECH for analysis. Contact ID TECH support at [support@idtechproducts.com](mailto:support@idtechproducts.com) for assistance.

## 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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Response Body                | LRC | CHK<br>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 V1.00                                                                    |            |             |                              |     |            |     |
| <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<br>Low | Len<br>High | Response Body                | LRC | CHK<br>SUM | ETX |
|--------------------|--|------------|-------------|------------------------------|-----|------------|-----|
| 02                 |  | 25         | 00          | 06 <Firmware Version Number> |     |            |     |
| Return Hex String: |  |            |             |                              |     |            |     |

**Response Body:** 06 + K21Version 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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Response Body               | LRC | CHK<br>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<br><br><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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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><br><[KeyStatusBlock2]> ...<br><[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:
  - 0: Not Exist
  - 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.<br>1: Exist<br>0xFF: STOP        |                                        |
| PIN Master Key             | 0: None<br>1: At least Exist a Master Key |                                        |
| Standard PIN Session Key   | 0: None.<br>1: Exist                      |                                        |
| Desjardins PIN Session Key | 0: None.<br>1: Exist                      |                                        |
| Account/MSR DUKPT Key      | 0: None.<br>1: Exist<br>0xFF: STOP        | Does not support this key.<br>Always 0 |
| Account/ICC DUKPT Key      | 0: None.<br>1: Exist<br>0xFF: STOP        | Does not support this key.<br>Always 0 |
| RKI-KEK (Admin DUKPT Key)  | 0: None.<br>1: Exist<br>0xFF: STOP        |                                        |
| Data DUKPT Key             | 0: None.<br>1: Exist<br>0xFF: STOP        |                                        |
| MAC DUKPT Key              | 0: None.<br>1: Exist<br>0xFF: STOP        |                                        |

If the L80 has not been key-injected, the response appears in the following format:  
02070006000000000000000060603

### 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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Response Body        | LRC | CHK<br>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<br>Low            | Len<br>High | Command Body   | LRC | CHK<br>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                                                                                                                                                                                                                  |                       |             |                |     |            |     |      |                       |      |       |       |       |      |       |      |       |        |       |        |       |
| <b>Where:</b> <Data Time> is 6 bytes data: Year, Month, Date, Hour, Minute, Second                                                                                                                                                                                                               |                       |             |                |     |            |     |      |                       |      |       |       |       |      |       |      |       |        |       |        |       |
| <table><tr><th>Item</th><th>Value Area (BCD Code)</th></tr><tr><td>Year</td><td>00~99</td></tr><tr><td>Month</td><td>01~12</td></tr><tr><td>Date</td><td>01~31</td></tr><tr><td>Hour</td><td>00~23</td></tr><tr><td>Minute</td><td>00~59</td></tr><tr><td>Second</td><td>00~59</td></tr></table> |                       |             |                |     |            |     | Item | Value Area (BCD Code) | Year | 00~99 | Month | 01~12 | Date | 01~31 | Hour | 00~23 | Minute | 00~59 | Second | 00~59 |
| 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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Response Body                    | LRC | CHK<br>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>                                                         |            |             |                                  |     |            |     |
| <b>Where:</b> <Data Time> is 6 bytes data: Year, Month, Date, Hour, Minute, Second.<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body            | LRC | CHK<br>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 00 | 4E  | 70      | 03  |
| Output Hex String: 78 46 7A 49 52 46 57 00 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<br>Low | Len<br>High | Command Body                                                      | LRC | CHK<br>SUM | ETX |
|--------------------------------------------------------------------------------------------------------|------------|-------------|-------------------------------------------------------------------|-----|------------|-----|
| 02                                                                                                     | 15         | 00          | 75 46 07 01 30 34 37 36 31 37 33 39 30 30<br>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<br>30 31 30 30 31 00 3D EB 03 |            |             |                                                                   |     |            |     |

#### Where:

- <Key Type>: 1 byte:
  - 0x00: MKSK-TDES                      External Plaintext PAN
  - 0x01: DUKPT-TDES or AES            External Plaintext PAN
  - 0x10: MKSK-TDES                      External Ciphertext PAN
  - 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:
  - If Get Encrypted PIN with DUKPT Key under Triple DES: 06 + 20 ASCII code KSN + 16 ASCII code Encrypted PIN block
  - If Get Encrypted PIN with MKSK: 06 + 16 ASCII code Encrypted PIN block
  - 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<br>02 FA 4B E3 15 1B 93 CD 05 9D 57 2A 88 83<br>3A B5 0E 73 C3 70 25 56 4E 38 77 B8 B4 F2<br>AF 45 65 DC 19 8A BA 9F E1 04 99 F3 82 F5<br>48 25 3D CB 8F 70 A9 22 B1 46 06 1A AE A4<br>AA 4C EB 0A BE 77 AB B9 DA 4C C5 C4 67 6E<br>9E AC 9A 2C 45 43 6C 5B 9C D1 8A A4 E1 FD<br>71 23 54 B7 7F 68 C0 52 4A 31 F5 D4 C4 6A<br>C7 35 86 94 C0 F0 F6 39 23 9E E9 FE 53 67<br>A1 D4 F0 0E B3 BC 2C 51 C1 F9 5F 80 F4 98<br>00 A6 48 7B 12 23 ED B1 12 D5 04 3B EE 71<br>48 F5 B6 F8 1C 00 81 9D 6F 18 6C 69 6C C9<br>2D 80 02 44 5C 8B 62 9D F4 5D D7 BF F8 37<br>86 3C DC 19 F8 15 FC C6 E1 2E 84 91 8E 92<br>54 FA E0 CF 1E 95 A8 16 52 7D 0F 1C 25 3A<br>80 1A 55 92 AD 01 CD 6B 5B CD 7B 15 30 4C<br>67 01 23 2D 90 BC C6 87 2A CD 65 A2 93 93<br>55 CA 19 80 72 FE 84 07 95 89 3E F5 B3 0B<br>EC 30 54 7F D7 68 B1 9E D9 A6 19 78 B6 D1<br>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<br>FA 4B E3 15 1B 93 CD 05 9D 57 2A 88 83 3A B5 0E 73 C3 70 25 56 4E<br>38 77 B8 B4 F2 AF 45 65 DC 19 8A BA 9F E1 04 99 F3 82 F5 48 25 3D<br>CB 8F 70 A9 22 B1 46 06 1A AE A4 AA 4C EB 0A BE 77 AB B9 DA 4C C5<br>C4 67 6E 9E AC 9A 2C 45 43 6C 5B 9C D1 8A A4 E1 FD 71 23 54 B7 7F<br>68 C0 52 4A 31 F5 D4 C4 6A C7 35 86 94 C0 F0 F6 39 23 9E E9 FE 53<br>67 A1 D4 F0 0E B3 BC 2C 51 C1 F9 5F 80 F4 98 00 A6 48 7B 12 23 ED<br>B1 12 D5 04 3B EE 71 48 F5 B6 F8 1C 00 81 9D 6F 18 6C 69 6C C9 2D<br>80 02 44 5C 8B 62 9D F4 5D D7 BF F8 37 86 3C DC 19 F8 15 FC C6 E1<br>2E 84 91 8E 92 54 FA E0 CF 1E 95 A8 16 52 7D 0F 1C 25 3A 80 1A 55<br>92 AD 01 CD 6B 5B CD 7B 15 30 4C 67 01 23 2D 90 BC C6 87 2A CD 65<br>A2 93 93 55 CA 19 80 72 FE 84 07 95 89 3E F5 B3 0B EC 30 54 7F D7<br>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:

- 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
- 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:

- 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.
- 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 Line1 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:
  - If Enter 2 numeric (12): 12 or \*\*
  - 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<br>Low | Len<br>High | Command Body                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | LRC | CHK<br>SUM | ETX |
|-----|------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------|-----|
| 02  | 0F         | 01          | 75 46 22 00 0C 04 08 41 42 43 44 45 46 47<br>48 2B 9A B6 F5 A9 A1 46 33 1E E9 BF A2 19<br>F7 88 85 CB B3 EF B2 E5 6A 8B EA D3 BA 7E<br>BC 42 05 41 F2 93 B1 5C D2 3A 50 91 D8 61<br>79 40 46 36 80 CC 46 2C EB D3 04 7C 60 3D<br>0B 7B 9C 0C 95 CD AB D4 D5 2F 27 A4 CA 29<br>4F 25 45 6C E0 18 E7 24 BC F0 B8 D0 18 76<br>6F 87 1D 55 E1 09 B2 62 21 6A 1D AF 37 03<br>2D E5 F7 E4 88 F6 FC 0C 31 2A 29 21 68 E2<br>8F 21 C4 EF 62 5F CB A3 FD 11 9C D0 E4 5B<br>80 7C F6 75 82 94 DA 35 10 67 E5 E6 2F 45<br>4F 25 6E E1 E3 F9 87 63 A2 7C EB 53 20 64<br>97 A7 75 C2 EA 3F CF F4 D1 ED 52 A4 81 E5<br>FF E7 A0 56 FA BD 19 D7 96 3C 9B 58 8C B6<br>0B 99 05 22 81 A4 C9 9F DB 11 3C 5C 6C 7B<br>39 34 49 62 5A 0D 3F A0 E7 14 CA A8 9B B3<br>68 1E 93 5F D6 6D C1 2B 35 51 9F AD 07 93<br>27 BB B6 1E 04 C2 E7 DF 7F 02 43 F6 07 60<br>73 EE 10 8F 79 01 F8 0B 5D 3E 96 C3 44 FA<br>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>:
  - Bit 0 - 0: display number for numeric key on the LCD
  - Bit 0 - 1: display "\*" for numeric key on the LCD
  - Bit 1 - 0: Output numeric for numeric key, 'C' for Cancel, 'E' for Enter, when key is pressed
  - 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:
  - If Enter 2 numeric (12): 12 or \*\*
  - 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<br>48 2B 9A B6 F5 A9 A1 46 33 1E E9 BF A2 19<br>F7 88 85 CB B3 EF B2 E5 6A 8B EA D3 BA 7E<br>BC 42 05 41 F2 93 B1 5C D2 3A 50 91 D8 61<br>79 40 46 36 80 CC 46 2C EB D3 04 7C 60 3D<br>0B 7B 9C 0C 95 CD AB D4 D5 2F 27 A4 CA 29<br>4F 25 45 6C E0 18 E7 24 BC F0 B8 D0 18 76<br>6F 87 1D 55 E1 09 B2 62 21 6A 1D AF 37 03<br>2D E5 F7 E4 88 F6 FC 0C 31 2A 29 21 68 E2<br>8F 21 C4 EF 62 5F CB A3 FD 11 9C D0 E4 5B<br>80 7C F6 75 82 94 DA 35 10 67 E5 E6 2F 45<br>4F 25 6E E1 E3 F9 87 63 A2 7C EB 53 20 64<br>97 A7 75 C2 EA 3F CF F4 D1 ED 52 A4 81 E5<br>FF E7 A0 56 FA BD 19 D7 96 3C 9B 58 8C B6<br>0B 99 05 22 81 A4 C9 9F DB 11 3C 5C 6C 7B<br>39 34 49 62 5A 0D 3F A0 E7 14 CA A8 9B B3<br>68 1E 93 5F D6 6D C1 2B 35 51 9F AD 07 93<br>27 BB B6 1E 04 C2 E7 DF 7F 02 43 F6 07 60<br>73 EE 10 8F 79 01 F8 0B 5D 3E 96 C3 44 FA<br>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

#### 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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body                 | LRC | CHK<br>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<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body                    | LRC | CHK<br>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<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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.<br>1: Device will not output any key event.                                                                                                                                                                                                                                                                                         |
| bit 6 ~ bit 3 | Reserved                                                                                                                                                                                                                                                                                                                                                                                                   |
| bit 2         | 0: When the <b>Get PIN from Host</b> 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.<br>1: When the <b>Get PIN from Host</b> 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 | <p>0: When the <b>Get PIN from CR</b> 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.</p> <p>1: When the <b>Get PIN from CR</b> 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.</p> |
| bit 0 | <p>0: When the <b>Get Numeric/Get Amount</b> 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.</p> <p>1: When <b>Get Numeric/Get Amount</b> 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.</p>          |

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<br><br><Control> 0: First Line 1: Second Line<br><br>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<br>Low | Len<br>High | Command Body               | LRC | CHK<br>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<br>Low | Len<br>High | Command Body            | LRC | CHK<br>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<br>Low | Len<br>High | Command Body                  | LRC | CHK<br>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                                                                 |            |             |                               |     |            |     |
| <b>Where:</b> <ul style="list-style-type: none"><li>• &lt;Line&gt;: Display line number 0 or 1</li><li>• &lt;1~16 Message &gt;: Message (ASCII Code: 0x20~0x7F)</li></ul> |            |             |                               |     |            |     |
| 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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Response Body                                         | LRC | CHK<br>SUM | ETX |
|-----------------------------------------------------|------------|-------------|-------------------------------------------------------|-----|------------|-----|
| 02                                                  | 05         | 00          | 06 8A 04 01 <Back Light Control>05 01<br><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<br>Low | Len<br>High | Command Body      | LRC | CHK<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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<br>Low | Len<br>High | Command Body           | LRC | CHK<br>SUM | ETX |
|-------------------------------------------------------------------------|------------|-------------|------------------------|-----|------------|-----|
| 02                                                                      | 06         | 00          | 70 53 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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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                                                                                                                                                                                                                               |           |          |                     |     |         |     |          |           |      |      |      |      |      |      |       |      |       |      |        |      |
| <table><tr><th>BaudRate</th><th>ASCIIChar</th></tr><tr><td>2400</td><td>0x32</td></tr><tr><td>4800</td><td>0x33</td></tr><tr><td>9600</td><td>0x34</td></tr><tr><td>19200</td><td>0x36</td></tr><tr><td>38400</td><td>0x37</td></tr><tr><td>115200</td><td>0x39</td></tr></table> |           |          |                     |     |         |     | BaudRate | ASCIIChar | 2400 | 0x32 | 4800 | 0x33 | 9600 | 0x34 | 19200 | 0x36 | 38400 | 0x37 | 115200 | 0x39 |
| 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<br>Low | Len<br>High | Command Body      | LRC | CHK<br>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<br>Low | Len<br>High | Command Body | LRC | CHK<br>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. Decommissioning PCI-Certified Devices

All PCI devices require proper decommissioning prior to device disposal in order to ensure the protection of all sensitive financial card data. For instructions on decommissioning your device, see [Decommissioning of PCI PTS Products](#) on the ID TECH Knowledge Base.

## 10. 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                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>The L80 not activated</b>                                              |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                          |
| The L80 is in the de-activated state (LED is red, device beeping quickly) | <ul style="list-style-type: none"><li>• The firmware needs to be downloaded for the first time.</li><li>• Physical tamper is triggered (device is not assembled).</li><li>• Battery is out of power.</li></ul> | <ul style="list-style-type: none"><li>• Check to make sure the device is fully assembled.</li><li>• Use USDK-PKI to activate device.</li></ul>                                                                                                                                                                           |
| LCD shows "Load Cert" (LED is red, device beeping slowly)                 | Activation process is not complete.                                                                                                                                                                            | Use USDK-PKI to activate the device.                                                                                                                                                                                                                                                                                     |
| <b>The L80 not working with VP5300</b>                                    |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                          |
| 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.                                                                                                  | <ul style="list-style-type: none"><li>• 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.</li><li>• When the L80 is connected to the card reader, the user should enter the pairing key sequence to pair the two devices.</li></ul> |

| General Issues                                                |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L80 does not appear to be powered on (no LCD or LEDs are lit) | <ul style="list-style-type: none"> <li>• Reader not powered on or using incorrect voltage.</li> <li>• Improper use of internal power supply provided for the VP5300.</li> </ul> | <ul style="list-style-type: none"> <li>• Check cable connections or replace with a known-good cable.</li> <li>• Verify that power is on and correct voltage and current are present.</li> <li>• Make sure that the power provided is within the specified range of the L80 PIN pad.</li> <li>• For more information, refer to Input Voltage information under the Electrical specification section.</li> <li>• Replace the L80 with a known-good device to verify that the power supply and wiring in the installation are sound.</li> </ul> |

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

## 11. 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](mailto:support@idtechproducts.com).