



Ingeniería Electrónica
SMART IDENT

LPP SERIES
Port powered
RS232 swipe reader

TECHNICAL MANUAL
Rev. c

Notice

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Revisions

Revision	Date	Changed Notes
A	May, 2000	<i>Initial Release</i>
B	Nov, 2014	<i>Instructions for mounting</i>
C	Jun, 2017	<i>Dimensions and pin out</i>

FCC

These equipments, had been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Operation of this equipment in a residential area is also likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

These readers also had been tested and found to comply with the agency requirements of specification for CE mark Class A.

Warning

Changes or modifications not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

Warranty

This product is served under one-year warranty of defects in material and functionality to the original purchasers. Within the warranty period, if the product found to be defective will be repaired or replaced. This warranty applies to the products only under the normal use of the original purchasers, and in no circumstances covers incidental or consequential damages through consumers' misuse or modification of the product.

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1. INTRODUCTION

Outdoor LPP series with RS232 interface is Port Powered RS232 swipe reader. This device is a compact magnetic swipe card reader which can decode magnetic cards encoded to ISO/ANSI standards swiped bi-directionally. Seeing the name of a thing one thinks of its function, the reader is powered through the RS232 serial port. Hence the reader does not require any external power supply and is compatible with any computer with a serial RS-232 interface such as personal computers or notebook.

These series operates in the following two basic modes:

- Ready Mode (Mode 1)
- Host Controlled Mode (Mode 2)

This device will execute LED activities when initialized. Upon power-up, the reader will then go to Mode 1, ready for the operation.

(Note: The reader will not respond until after the LED activity is completed)

2. FEATURES AND SPECIFICATION

2.1 Features

- Powered by the serial port, without external power adapter.
- RS-232 interface; Bi-directional card reading.
- Read credit cards, Bank cards, Drivers licenses, and ID cards.
- All tracks (Single, Dual, Triple) are available.
- Small size, easily for operating.
- Read low & high coercivity cards (from 300 to 4000 Oe)
- Green LED for status
- Watch dog

2.2 SPECIFICATION

2.2.1 Operating

- Power Input: From RS232
- Reference Standards: ISO/ANSI/AAMVA/CA DMV
- Recording Method: Two-frequency coherent phase (F2F)
- Message format: ACSII
- Card Speed: 10cm/sec.~140cm/sec. (5 ips ~55 ips)
- MTBF: Electronics: 100,000 hours; Heads life: 500,000 passes

2.2.2 Electrical

- DTR, RTS: 5 to 15 VDC
- Current:
- Ready mode: Stand-by (2.5 mA) Transmission (6-7 mA)
- Host Controlled mode: Stand-by (2.5 mA) Transmission (6-7 mA)
- RS232 Communication: 9600 bps, none parity, 8 data bits, 1 stop bit

2.2.3 Mechanical

- Dimensions: L: 160mm W: 38mm H:50mm
- Connector: DB9 Female with cable 1.5m
- Color: Black
- Aluminum Case

2.2.4 Environment

- Temperature Operating: -10° ~ 55°
- Temperature Storage: -30° ~ 70°
- Humidity Operating: 10%~90% non-condensing;
- Humidity Storage: up to 100% non-condensing

2.2.5 Interconnections:

DB9	SIGNAL	Direction
1		
2	TXD	Out
3	RXD	In
4		-
5	GND	Power
6	DTR	Power
7	CTS	Power
8		
9		

Note: as viewed from the reader

2.2.6 Power Requirements

No external power supply is required. The reader receives power through the host's RS232 port.

- To maintain power requirements, the cable length is suggested less than 1.5m.
- The reader will only receive power from the RS232 port when RTS and DTR are at a positive voltage level.

3. INSTALLATION

In order to correctly operate, we suggest you to follow the below procedures.

3.1 Requirements

- PC with Com Port
- RS232 Port Powered reader
- Connector: DB9 Female with cable
- Communication program such as Hyper Terminal.

3.2 Installation and Test

3.2.1 Installation: Perform the below steps for installing the reader:

1. Connect the reader cable connector into a 9-pin serial Com Port on the computer.
2. Use a communication program such as Hyper Terminal.
On the program -
Select the Com Port the reader is connected to.
Select the baud rate of 9600.
Select none parity, 8 data bits, 1 stop bit.
3. If connected correctly, the green LED on the reader will light. And “PORTPOWER READER” will pop out on the screen.

3.2.2 Testing

While the LED on, swipe a card and some numeric or alphanumeric characters will show on the screen as follows.

- Under a good reading, a string characters –
Beginning with ‘%’ and ending with ‘?’ This is Track1 data.
Beginning with ‘;’ and ending with ‘?’ This is Track2 data.
Beginning with ‘+’, or ‘#’(AAMVA) or ‘!’(CA DMV) and ending with ‘?’ This is Track3 data.

An example:

`%LPP READER111111?;222222222222?+33333333333333?`
Track1 Track2 Track3

- Under a bad reading or no data happening to either of the tracks, a character ‘F’ (bad reading) or ‘N’ (no data) will replace a string characters as above description.

An example: If Track 2 is bad and track1 and 3 are good

`%LPP READER111111?;F?+33333333333333?`
Track1 Track2 Track3

An example: If Track 2 is no data and track1 and 3 are good

`%LPP READER111111?;N?+33333333333333?`
Track1 Track2 Track3

After your swiping, the data you get is similar to the above. This device is ready for operation. If the data you get on the screen is not numeric or alphanumeric, check the communication rate.

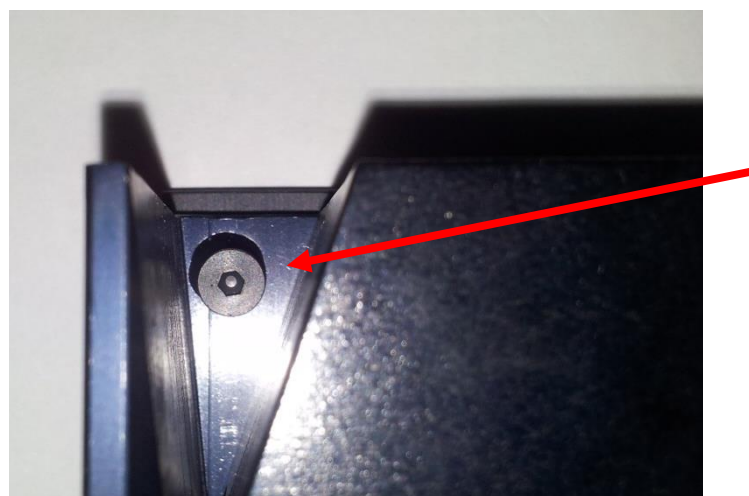
Table 2-1 SS and ES track symbol

SS (Start Sentinel)		ES(End Sentinel)	Description
%	%	?	Track1
;	;	?	Track2
+	;	?	Track3 -ISO
#	%	?	Track3 –AAMVA
!	!	?	Track3 – CA DMV

The left column of SS is the default track symbol.
The right column of SS will replace left column by command.

3.2.3 Mounting

For mounting the reader on the wall, you must remove 2 screws that are showed in the photo.



Then slide the back part of the reader (wall support).



Two brass screws should not be loosening. If these two screws are loosed, the slot where the card is swiped can move, changing the pressure and the space by the cards.

REMARK: In case you have to loosen these screws, you should put a gauge thickness equal to the card or ticket that we will use plus 0.2 mm

4. OPERATION

4.1 Ready Mode (Mode 1):

These series defaults to Mode 1 when it is turned on.

In Mode 1:

- The reader is always transmitting the card data in track order immediately after swiping a card.
- The transmission data format will default to resemble:

Track 1:

< SS > < Track1 Data > < ES >

Track 2:

< SS > < Track2 Data > < ES >

Track3:

< SS > < Track3 Data > < ES >

Note: 1. SS, ES can be disabled by a command 'f'.

2. Under SS exists, the track symbols can be changed by a command 'M' .

- User-configurable data formats:

By commands, after every swipe, the reader can strip the card data of special characters (LRC, LF, STX, ETX).

LRC enabled:

Track 1:

< SS > < Track1 Data > < ES > <LRC>

Track 2:

< SS > < Track2 Data > < ES > <LRC>

Track3:

< SS > < Track3 Data > < ES > <LRC>

LF enabled:

For example:

<SS><Track1Data><ES><LRC><LF> <SS><Track2 Data><ES><LRC>

or

<SS><Track1Data><ES><LRC><LF> <SS><Track2 Data><ES><LRC><LF>

< SS > < Track3 Data > < ES > <LRC>

STX, ETX enabled:

For example:

<STX><SS><Track1Data><ES><LRC><LF> <SS><Track2 Data><ES><LRC><ETX>

or

<STX><SS><Track1Data><ES><LRC><LF> <SS><Track2 Data><ES><LRC><LF>

< SS > < Track3 Data > < ES > <LRC><ETX>

Note: STX, LF, ETX, SS, ES, LRC can be individually enabled / disabled by commands referenced the command table.

- Other commands

A command:

'R'(52H) can be issued to RESET the reader;

'U'(55H) can be issued to the reader to identify the card type using in this swipe; 'V'(54H) can be issued to the reader to report the firmware reversion;

'M'(54H) can be issued to the reader to have reading error message;

'S'(53K Hex) can be issued to the reader to switch to Mode 2 operation.

4.2 Host Controlled Mode (Mode 2)

These series will operate in Mode 2 when the Switch command, s (73 Hex), is received and acknowledged. In this mode, all reader actions are now controlled by host commands. In Mode 2:

- The reader has to be re-armed to transmit card data every card swipes.

After swiping, it's a MUST to click the command 'O' to ask the reader to transmit data all tracks to the host; to click the command '1', '2', or '3' to ask the reader to transmit data (ASCII code) track 1, track2 or track3 to the host; to click the command '4', '5', or '6' to ask the reader to transmit data (Raw data) track 1, track2 or track3 to the host.

Note: Always send the Clear command, C(43H) first before sending an Transmit Track Data command. This will ensure that the buffer gets clear.

- If no commands to configure the data format, the data format will default to transmit. Reference the data format in Mode 1.
- User-configurable data formats: described in Mode 1.
- Other commands

A command:

'R'(52H) can be issued to reset the reader;

'U'(55H) can be issued to the reader to identify the card type using in this swipe; 'V'(54H) can be issued to the reader to report the firmware reversion.

'S'(53H) can be issued to the reader to switch back to Mode 1 operation. Before switching back to Mode 1, it is necessary to issue the command 'C'(43H) to the reader for clearing the read buffer.

5. COMMAND TABLE

NO.	ASCII Character	Definition	Action
1	s(73H)	Mode switch	1) Switch to Mode 2 2) Transmit ACK
2	R(52H)	Initialize	1) Reset 2) Transmit "PORTPOWER READER"
3	U(55H)	STATUS MESSAGES	Response card status
4	F(46H)	SS enabled *	1) SS code exist 2) Transmit ACK
5	f(66H)	SS disabled	1) SS code non-exist 2) Transmit ACK
6	L(4CH)	Replaced SS enabled	1) Under SS code exist, the default track SS symbols can be changed. 2) Transmit ACK
7	l(6CH)	Replaced SS disabled *	1) Under SS code exist, the track SS symbol can be returned to default track symbols. 2) Transmit ACK
8	G(47H)	ES enabled *	1) ES code exist 2) Transmit ACK
9	g(67H)	ES disabled	1) ES code non-exist 2) Transmit ACK
10	H(48H)	LRC enabled	1) LRC code exist 2) Transmit ACK
11	h(68H)	LRC disabled *	1) LRC code non-exist 2) Transmit ACK
12	I(49H)	STX enabled	1) STX code exist 2) Transmit ACK
13	i(69H)	STX disabled *	1) STX code non-exist 2) Transmit ACK
14	J(4AH)	EXT enabled	1) EXT code exist 2) Transmit ACK
15	j(6AH)	EXT disabled *	1) EXT code non-exist 2) Transmit ACK
16	K(4BH)	LF enabled	1) LF code exist 2) Transmit ACK
17	k(6BH)	LF disabled *	1) LF code non-exist 2) Transmit ACK
18	M(4DH)	Error message enabled *	1) Read error message "F" exist 2) Transmit ACK
19	m(6DH)	Error message disabled	1) Read error message "F" non-exist 2) Transmit ACK
20	V(54H)	Firmware Reversion	1) Firmware Reversion 2) Transmit "REV : 1.2"

* : default setting

Command table (Mode2 only)

NO.	ASCII Character	Definition	Action
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1	S(53H)	Mode switch	1) Switch to Ready Mode 2) Transmit ACK
2	O (4FH)	Transmit Track1, 2, 3 data	1) Transmit data (ASCII) from read buffer 2) If good, Transmit data else, Transmit error message NAK
3	1 (31H)	Transmit Track1 data	1) Transmit data (ASCII) from read buffer 2) If good, Transmit data else, Transmit error message NAK
4	2 (32H)	Transmit Track 2 data	
5	3 (33H)	Transmit Track 3 data	
6	5 (35H)	Transmit Track1 raw data	1) Transmit raw data from read buffer
7	6 (36H)	Transmit Track 2 raw data	2) If good, Transmit data else, Transmit error message NAK
8	7 (37H)	Transmit Track 3 raw data	
9	C (43H)	Clear read buffer	Clear read buffer

6. DIMENSIONS AND PIN OUT

