

## Product Specification

# SPECIFICATION

## For

# APPROVAL

(     ) Preliminary Specification

(     ) Final Specification

Title	Mobile Pro Basic / Plus
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BUYER NAME	
MODEL NAME	

SUPPLIER	AM Tech
MODEL NAME	Mobile Pro Basic / Plus

SIGNATURE	DATE
_____	_____
_____	_____
_____	_____

Please return 1 copy for our confirmation  
with your signature and comments.

APPROVED BY	DATE
_____	_____
REVIEWED BY	
_____	_____
PREPARED BY	
_____	_____

Product R&D Lab.  
AM Tech. Co., Ltd.

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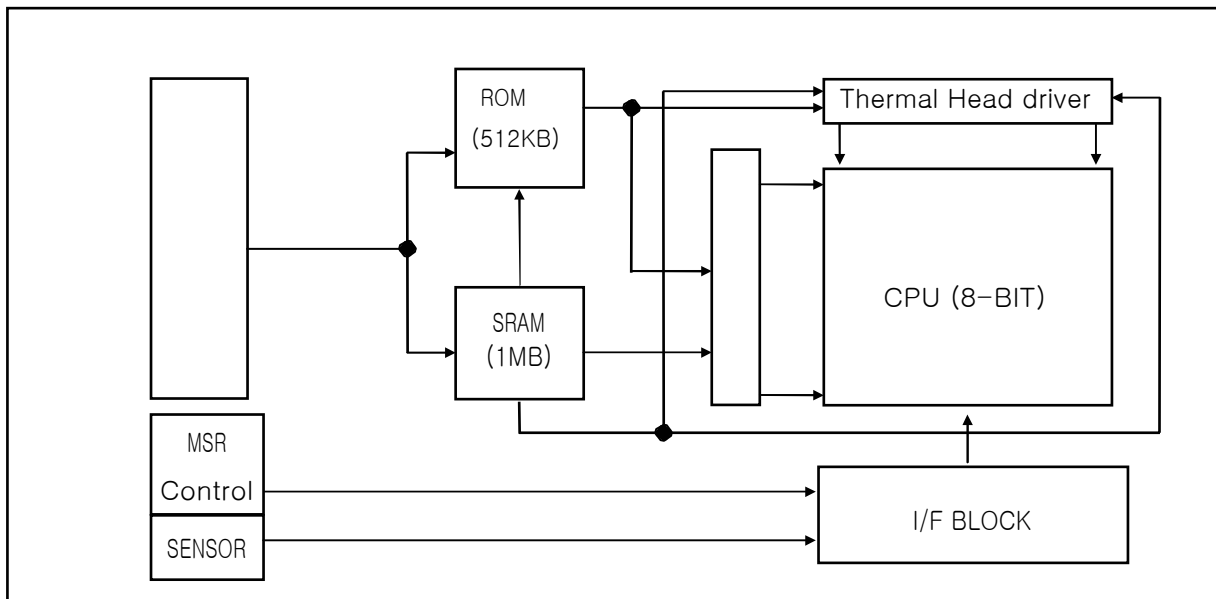
## Record of Revisions

Revision Version	Date	DESCRIPTION
0.1	Jan 30, 2001	Preliminary
1.1	Mar 28,2003	
1.2	December 10,2006	

**Product Specification**
**1. General Descriptions**

The AM Tech model Mobile Pro Basic/Plus is a Direct Thermal Printer with a Magnetic Stripe Card Reader module Include system. This Printer has a 48mm active printable area with speed of 50mm/sec. Print Resolution of Mobile Pro Basic/Plus is total 384dots, 8dot per mm.

The Mobile Pro Basic/Plus is intended to support applications where Credit Authorization Terminals, Receipt printers, Ticket printers. In combination with the magnetic Card Reader, the Mobile Pro Basic/Plus characteristics provide an excellent quality print for casher automation products such as POS Printer.


**[General Characteristics]**

The following are general features of the model Mobile Pro Basic/Plus;

Active print area	48 mm (384DOT)
Outsize dimensions	130.6w * 38.6h * 128.5d (mm)(Without Communication and Power Connector)
Print resolution	8dot/ mm
Paper feeding Method	Friction feeding
Printing Speed	MAX 50mm/sec
Drive Voltage	Motor, head +9V(+/-5%) logic +5V(+/-5%)
Printer Head Life	50Km
Power Supply Type	DC 12V(Range:10V ~ V16)
Paper Size	Out-Diameter: 48mm, Width: 58mm -0.5mm, 60g/㎡
Magnetic Stripe Reader	ISO-I,II,III available upon customer request ( default: Track II, track I,III Option)
Total Weight	550g(Approx. not include power, paper)

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## 2. Printer Command

### LF

[Name] Print and line feed

[Format] ASC II            LF  
          Hex            0A  
          Decimal        10

[Description] Prints the data in the print buffer and feed one line based on the current line spacing.

[Notes]

- This command sets the print position to the beginning of the line.

### FF

[Name] Print raster bit image and cancel raster bit Image mode

[Format] ASC II            FF  
          Hex            0C  
          Decimal        12

[Description] Prints the data in the print buffer collectively

[Notes]

- The buffer data is deleted after being printed.

### ESC w n

[ Name ] To set/cancel double width magnify

[Format] ASC II        ESC        w        n  
          Hex        1B        77        n  
          Decimal    27        119        n

[Range]  $0 \leq n \leq 255$

[Description]     $n = 01H$  or  $31H$     -- set double width magnify  
                   $n = 00H$  or  $30H$     -- cancel double width magnify

### ESC y n

[ Name] To set/cancel double height magnify

[Format] ASC II        ESC        y        n  
          Hex        1B        79        n  
          Decimal    27        121        n

[Range]  $0 \leq n \leq 255$

[Description]     $n = 01H$  or  $31H$     -- set double height magnify  
                   $n = 00H$  or  $30H$     -- cancel double height magnify

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ESC r n

[Name] Turn white / black reverse printing mode

[Format]	ASC II	ESC	r	n
	Hex	1B	72	n
	Decimal	27	114	n

[Range]  $0 \leq n \leq 255$

[Description] Turns on or off white / black reverse printing mode.

- When the LSB of n is 0, white / black reverse mode is turned off.
- When the LSB of n is 1, white / black reverse mode is turned on.

ESC z n

[Name] Shadow printing mode

[Format]	ASC II	ESC	z	n
	Hex	1B	7A	n
	Decimal	27	122	n

[Range]  $0 \leq n \leq 255$

[Description] Shadow printing mode.

- When the LSB of n is 0, shadow mode is turned off.
- When the LSB of n is 1, shadow mode is turned on.

ESC S

[Name] STATUS REQUEST

[Format]	ASC II	ESC	S
	Hex	1B	53
	Decimal	27	83

[Description] Printer status Send

- . When O : On-line
- . When P : Paper Out

[Printer Response Data Transfer]

STX	CMD	Data Length	DATA	CS	ETX
0x02	's '	2Byte	O / P	1Byte	0x03

ESC + n M

[Name] Tiff encoding select

[Format]	ASC II	ESC	+	n	M
	Hex	1B	2B	n	4D
	Decimal	27	43	n	77

[Description] n = 50(32) : Select tiff encoding.

n = 48(30) : Cancel tiff encoding.

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ESC ~ y + n1 n2 n3 E

[Name] n/203 inch line feed (When raster bit image mode)

[Format]	ASC II	ESC	~	y	+	n1	n2	n3	E	
	Hex		1B	7E	79	2B	n1	n2	n3	45
	Decimal		27	126	121	43	n1	n2	n3	69

[Range] 48 ≤ n1,n2,n3 ≤ 57

[Description]  $n = ((n1 \& 0x0F) \times 100) + ((n2 \& 0x0F) \times 10) + (n3 \& 0x0F)$

ESC # b x1 x2 E d1...dk

[Name] Send raster bit image

[Format]	ASC II	ESC	#	b	x1	x2	E	d1...dk
	Hex		1B	23	62	x1	x2	45 d1...dk
	Decimal		27	35	98	x1	x2	69 d1...dk

[Range] 48 ≤ x1,x2 ≤ 57

0 ≤ d ≤ 255

$k = ((x1 \& 0x0F) \times 10) + (x2 \& 0x0F)$

[Description] Select Raster bit-image mode.

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**3. Protocol (Please note that this protocol is for only Encyption firmware)**

SPEED: 9600BPS, 8BIT,NOPARITY, 1STOP-BIT

[Card Read data transfer]

STX	CMD	Data Length	Error	DATA	CS	ETX
0x02	' a'	2Byte	1 Byte	N Byte	1Byte	0x03

- [Function] Card Data Reading Transfer
- Response:  
0x00: data Error

[Printer data transfer]

STX	CMD	Data Length	DATA	CS	ETX
0x02	' B'	2Byte	N Byte	1Byte	0x03

- [Function] Printer Data Transfer
- Response:  
0x00: data Error

[Printer Response data transfer]

STX	CMD	Data Length	DATA	CS	ETX
0x02	' b'	2Byte	1 Byte	1Byte	0x03

- [Function] Printer Response Transfer
- Data:  
0x00: data Error

Note >> 1. DATA Length=(Error+DATA)

2. CS : a number that sum of data frame except STX,ETX makes zero

[ Data Encryption]

Dn: N-th DATA

A: (Code Value)(0x02) Cn:N-th Encryption Data

$Cn = Dn + A$



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### [ Data Conversion Procedure]

ORIGIANL DATA	CONVERTED DATA	REMARKS
0x02	0x1B,0xFD	STX
0x03	0x1B,0xFC	ETX
0x1B	0x1B,0xE4	ESC

Ex ) ① Data: 0x41(A) 0x42(B) 0x43(C) 0x44(D) 0x0A(LF)

Æ 0x02 0x42 0x00 0x05 0x41 0x42 0x43 0x44 0x0A 0xA5 0x03

CS =0x100-(0x42+0x00+0x05+0x41+0x42+0x43+0x44+0x0A)

=0x100-(0x15B)= 0x100-0x5B=0xA5

② Data : 0x1B(ESC) 0x77(w) 0x01 0x41(A) 0x42(B) 0x43(C) 0x44(D) 0x0A(LF)

Æ 0x02 0x42 0x00 0x08 0x1B 0xE4 0x77 0x01 0x41 0x42 0x43 0x44 0x0A 0x0F 0x03

CS =0x100-(0x42+0x00+0x08+0x1B+0x77+0x01+0x41+0x42+0x43+0x44+0x0A)

=0x100-(0x1F1)= 0x100-0xF1=0x0F

## 4. Magnetic Card Reader Specifications

### [ Card Standards ]

CARD STANDARD	ISO-7811		
READING METHOD	F2F(FM)		
TRACK USED	TRACK1	TRACK2	TRACK3
	ISO I (IATA)	ISO II (ABA)	ISO III (MINTS)
READING DENSITY	210 BPI	75 BPI	210 BPI
READING CAPACITY	79 CHARACTERS (7-BIT CODE)	40 CHARACTERS (5-BIT CODE)	107 CHARACTERS (5-BIT CODE)
CARD THICKNESS	PLASTIC : 0.76 ± 0.08mm		

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### [ Environmental Requirements ]

- Ambient Temperature
  - Storage : -20°C to +70°C
  - Operating : 0°C to +50°C
- Ambient Relative Humidity
  - Storage : 0 to 95 %
  - Operating : 10 to 90 % (No Condensation)

### [ Operational Characteristics]

- Card Feeding Speed : 20 to 120 cm/sec
- Head Life Time : Approximately 500,000 passes
- Jitter Card : Less than 18 %

## 5. Interface Connections

This Printer employs two interface connections, a 2 pin connector is used for the module electronics power supply and a four pin connector, are used for the communication with host system. The electronics interface connector is a model 35317-4P manufactured by HANLIM. The pin configuration for the connector is shown in the table below.

**Table.1 COMMUNICATION CONNECTOR PIN CONFIGURATION**

Pin	CNN	Description	Pin	Symbol	Description
1	12V	NOT USE	1	N.C	(N.C)
2	RX	PRINTER RX	2	RX	RX (HOST MDT-2000)
3	TX	PRINTER TX	3	GND	GND
4	GND	GROUND	4	TX	

\*53014-4P(MOLEX)

\*35317-4P(HANLIM)

12V	1 – 1(N.C)		
RX	2 Æ 4	RX	
TX	3 Æ 2	GND	
GND	4 Æ 3	TX	

**Table.2 POWER SUPPLY CONNECTOR PIN CONFIGURATION**

Pin	Symbol	Description	Notes
1	VCC	12V FROM ACC	
2	GND	GROUND	

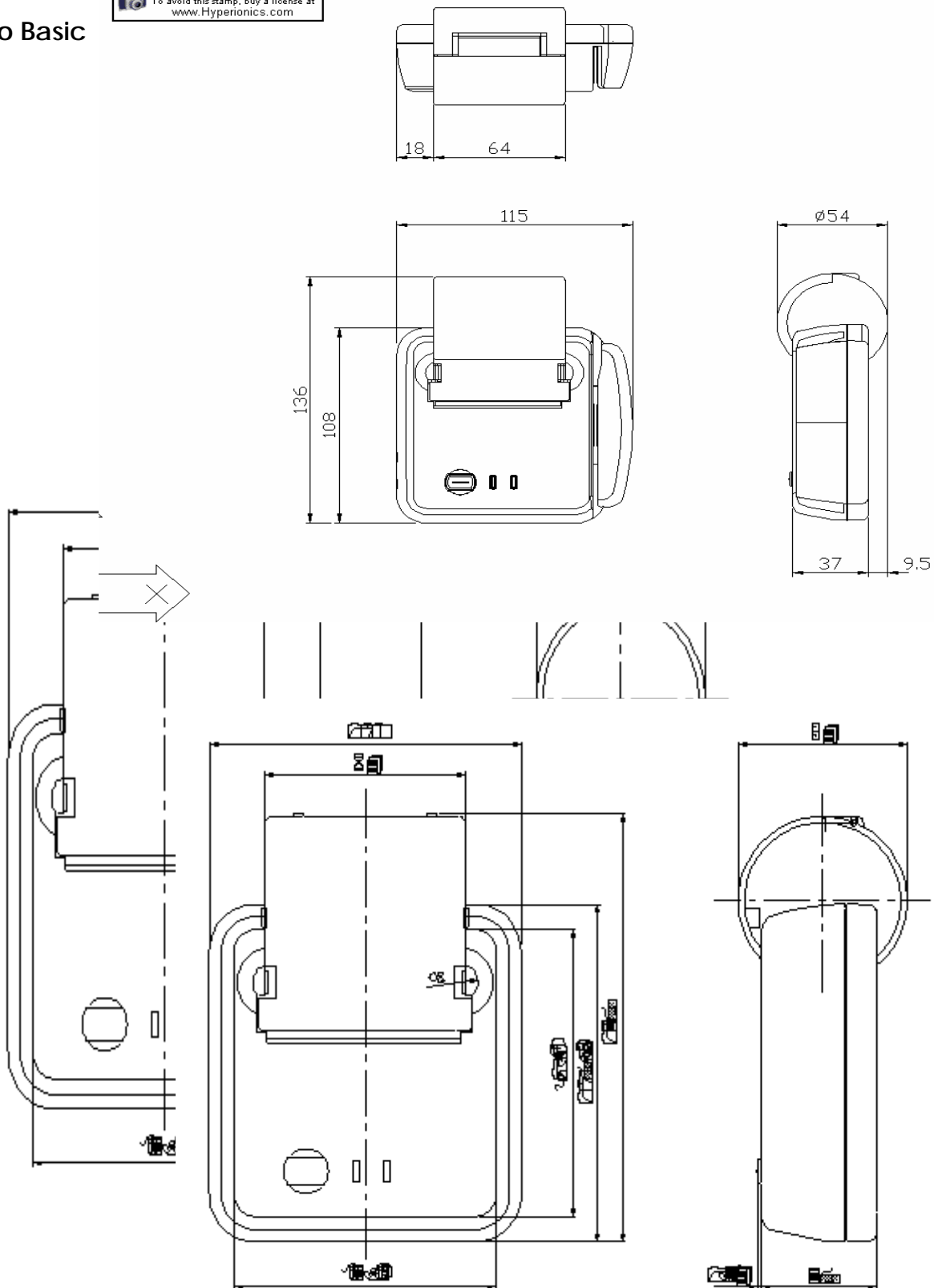
\*5267-2P(MOLEX)

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**6. Mechanical Dimension**

Mobile  
Pro Basic

Created with HyperSnap-DX 4  
To avoid this stamp, buy a license at  
[www.hyperionics.com](http://www.hyperionics.com)



## **7. PRECAUTIONS**

Please pay attention to the followings when you use this Printer.

- 1) You must mount Module using mounting holes arranged in bottom 4 corners.
- 2) Be sure to turn off the power when connecting or disconnecting the circuit.
- 3) Pay attention not to scratch or press this surface with any hard object.
- 4) When the Printer surface is become dirty, please wipe it off with a soft material. (ie. cotton ball)
- 5) Do not disassemble the module and be careful not to incur a mechanical shock that might occur during installation. It may cause permanent damage.
- 6) Avoid contact with water as it may a short circuit within the printer.
- 7) Do not apply invalid signal, especially very high voltage power. Invalid Power causes improper shutdown of Power or permanent damage to Printer.