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WBM-1300 SERIES

HALF-INSERTION MAGNETIC CARD READER



WBM-1300 SERIES

HALF-INSERTION MAGNETIC CARD READER

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Half-Insert Magnetic Card Reader

1. OVERVIEW

WBM-1300 series is the manual half-insertion magnetic card reader with RS-232 interface, port powered, can read track 1, 2 and 3 (accordance with ISO7811Standard).

It can read approximately 60% of the magnetic stripe. (Approximately 52 characters on track 1; 25 characters on track 2; and 73 characters on track 3)

2. MODEL TABEL

MODEL	Din	Dimensions (mm)		ISO STANDARD		
MODEL	W	L	Н	I (IATA)	II (ABA)	III (MINTS)
WBM-1320		101.5 x 93.0 x 25.5			R	- 11
WBM-1330				10.		R
WBM-1350	101			R	R	1
WBM-1360	101.			100	R	R
WBM-1370				R	R	R

3. ENVIRONMENTAL REQUIREMENTS

Operation temperature and humidity $-20^{\circ}\text{C} \sim 70^{\circ}\text{C}, 20 \sim 90\% \text{ RH}$ Storage temperature and humidity $-30^{\circ}\text{C} \sim 70^{\circ}\text{C}, \text{Less than } 95\% \text{ RH}$

4. TECHNICAL PARAMETERS

Standard	ISO 7811/2			
Track	ISOI (IATA),	ISO 2 (ABA),	ISO 3 (MINTS)	
Recording density	210 BPI	75 BPI	210 BPI	
Record characters (half-insertion)	52 Characters	25 Characters	73 Characters	
Power	+5V DC ±5%	•	•	
Current	65mA(max.)	65mA(max.)		
Head function	Read track width:	1.5mm		
Thickness	PVC 0.76 ± 0.08m	PVC 0.76 ± 0.08mm		
Operating speed	10 ~ 150cm/sec			
Error rate	Under 0.5%(JSE to	Under 0.5%(JSE test card)		
Operating position	Indoor	Indoor		
Head life	500,000 times (1 time: slot card at a time)			

1. OVERVIEW

WBM-1300 series is the manual half-insertion magnetic card reader with RS-232 interface, port powered, can read track 1, 2 and 3 (accordance with ISO7811Standard). It can read approximately 60% of the magnetic stripe. (Approximately 52 characters on track 1; 25 characters on track 2; and 73 characters on track 3)

2. MODEL TABEL

MODEL

Dimensions (mm) ISO STANDARD W L H I (IATA) II (ABA) III (MINTS) WBM-1320 R WBM-1330 R WBM-1350 R R WBM-1360 R R WBM-1370

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101.5 x 93.0 x 25.5

RRR

3. ENVIRONMENTAL REQUIREMENTS

Operation temperature and humidity -20°C ~ 70°C, 20 ~ 90% RH

Storage temperature and humidity -30°C ~ 70°C,Less than 95% RH

4. TECHNICAL PARAMETERS

Standard ISO 7811/2

Track ISO1 (IATA), ISO 2 (ABA), ISO 3 (MINTS)

Recording density 210 BPI 75 BPI 210 BPI

Record characters (half-insertion) 52 Characters 25 Characters 73 Characters

Power +5V DC $\pm 5\%$

Current 65mA(max.)

Head function Read track width: 1.5mm

Thickness PVC 0.76 ± 0.08 mm

Operating speed 10 ~ 150cm/sec

Error rate Under 0.5%(JSE test card)

Operating position Indoor

Head life 500,000 times (1 time: slot card at a time)

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5. INTERFACE

5.1 Physical connection 5.1.1 RS232 connection

RS-232C Signal	Host machine (9 pin)	Card machine (6 pin)	Functions
TXD	2	4	Transmitting Data
RXD	3	5	Receiving Data
GOUND	5	6	Signal Ground

5.1.2 Card machine interface pin description

Pin No.	Signal Name	Functions	
1	GND	Ground	
2	VCC	Power +5VDC	
3	GND	Ground	
4	TXD	Transmitting Data	
5	RXD	Receiving Data	
6	GND	Ground	



5.2 Software connection

5.2.1 Factory default

(1) Communication type	: Asynchronous half-duplex
(2) Baud rate	: 9600 bps (can be set)
(3) Data length	: 8 bit no parity
(4) Startup bit :	: 1 bit
(5) Stop bit	: 1 bit

5.1 Physical connection

5.1.1 RS232 connection

RS-232C Signal Host machine (9 pin) Card machine (6 pin) Functions

TXD 2 4 Transmitting Data RXD 3 5 Receiving Data GOUND 5 6 Signal Ground

5.1.2 Card machine interface pin description

Pin No. Signal Name Functions 1 GND Ground 2 VCC Power +5VDC 3 GND Ground 4 TXD Transmitting Data 5 RXD Receiving Data 6 GND Ground

#1 #6

5.2 Software connection

5.2.1 Factory default

(1) Communication type : Asynchronous half-duplex

(2) Baud rate: 9600 bps (can be set)

(3) Data length: 8 bit no parity

(4) Startup bit : : 1 bit (5) Stop bit : 1 bit

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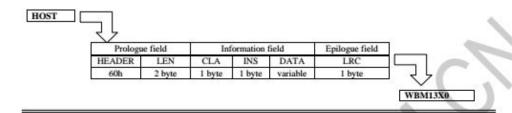
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6. COMMUNICATION PROTOCOL



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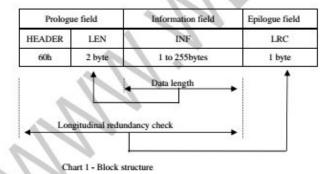


Prologue field		Information field	
LEN	EC	DATA	LRC
2 byte	1 byte	variable	1 byte
	LEN	LEN EC	LEN EC DATA

6.1 Communication Frame Description

Boot Sector (mandatory)

- -- Frame initiation region, contains the length of information area.
 -- Contains the application data.
- Information Zone (optional)
- Check Area (mandatory)
- LRC checksum.



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HOST

Prologue field Information field Epilogue field HEADER LEN CLA INS DATA LRC

60h 2 byte 1 byte 1 byte variable 1 byte

WBM13X0

WBM13X0

Prologue field Information field Epilogue field HEADER LEN EC DATA LRC

60h 2 byte 1 byte variable 1 byte

HOST

6.1 Communication Frame Description

Boot Sector (mandatory) -- Frame initiation region, contains the length of information area. Information Zone (optional) -- Contains the application data. Check Area (mandatory) -- LRC checksum.

Prologue field Information field Epilogue field

HEADER LEN INF LRC

60h 2 byte 1 to 255bytes 1 byte

Data length

Longitudinal redundancy check

Chart 1 - Block structure

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6.2 Frame Elements

6.2.1 Boot Sector (mandatory)

This area is necessary, which consists of two parts: header and length.

(1) Header

Header composed by one byte, used to indicate the start of the frame. Default header is 0x60h.

(2) Length

Length used to indicate the bytes need to send in the message area. As chart 1

'00' to 'FF'	Indicate the data length of information area is 0 - 255	
'100' -'FFFF	Reserved for future use.	10

6.2.2 Information Area

Information Area is optional, when exist it contains the application date and non-application of control and status. The transmitted bytes in the header were indicated by length.

(1) Composition of Information Area

Information Area must consists of a command area of two-byte length and an optional variable-length data zone.

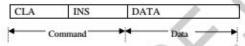


Chart 2 Composition of Information Area

Code	Description	Length
CLA	Command Type	1 bit
INS	Instruction Code	1bit
DATA	Transmitted parameters	Multi bits

Chart 1 - - Composition of Information Area

(2) Response of Information Area

The Response of Information Area consists of one-bit header and variable-length subject.

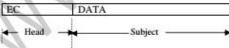


Chart 3-Response of Information Area

Code	Description	Length
EC	Error Code	1bit
DATA	Receiving Data	Multi bits

Chart 2 Response of Information Area

6.2.3 Check Area (mandatory)

The length of LRC Check is one-bit, the LRC Checksum contain the XOR from the head to all bytes of information zone.

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6.2.1 Boot Sector (mandatory)

This area is necessary, which consists of two parts: header and length. (1) Header Header composed by one byte, used to indicate the start of the frame. Default header is 0x60h.

(2) Length Length used to indicate the bytes need to send in the message area. As chart 1

'00' to 'FF' Indicate the data length of information area is $0 \sim 255$ '100' \sim 'FFFF Reserved for future use.

6.2.2 Information Area

Information Area is optional, when exist it contains the application date and non-application of control and status. The transmitted bytes in the header were indicated by length.

(1) Composition of Information Area Information Area must consists of a command area of two-byte length and an optional variable–length data zone.

CLA INS DATA

Command Data

Chart 2 Composition of Information Area

Code Description Length CLA Command Type 1 bit INS Instruction Code 1bit DATA Transmitted parameters Multi bits

Chart 1 - - Composition of Information Area

(2) Response of Information Area

The Response of Information Area consists of one-bit header and variable-length subject.

EC DATA

Head Subjectr

Chart 3-Response of Information Area

Code Description Length EC Error Code 1bit DATA Receiving Data Multi bits

Chart 2 Response of Information Area

6.2.3 Check Area (mandatory)

The length of LRC Check is one-bit, the LRC Checksum contain the XOR from the head to all bytes of information zone.

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7. COMMAND FORMAT

7.1 Communication code list

Command	CLA	INS	Descriptions
Settings	'C' (43h)	'0' (30h)	Restore Factory Settings
		'1' (31h)	The first track switch
		'2' (32h)	The second track switch
		'3'(33h)	The third track switch
		'4'(34h)	Set the boud rate
		'5'(35h)	The prefix characters of the third track";", "+"selector switch
		'6' (36h)	Whether to allow framework characters
		'7' (37h)	Whether to plus the Enter
		'8' (38h)	Read device configuration
		'9' (39h)	Version NO. of read device
		':' (3Ah)	Read device status

7.2 Error Code List

Error Code	Descriptions		
'0' (30h)	Normal execution		
'1' (31h)	LRC error in communication		
'2' (32h)	Command Error		
'3' (33h)	Data error		

7.3 Control Commands

7.3.1 Restore factory settings



Prologue field		Information field		Epilogue field	
HEADER	LEN		INS	LRC	
60h	0002h	'C'(43h)	'0'(30h)	11h	
1 byte	2 byte	1 byte	1 byte	1 byte	



Information field (CLA,INS): See section 6.1. for the Command code list.

WBM13X0

WBM13X0



Prologu	e field	Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??
1 byte	2 byte	1 byte	1 byte

HOST

- Error code byte (EC): See section 6.2. for the Error code list.
- Factory default settings:

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7.1 Communication code list

Command CLA INS Descriptions

Settings 'C' (43h) '0' (30h) Restore Factory Settings

'1' (31h) The first track switch '2' (32h) The second track switch '3'(33h) The third track switch '4'(34h) Set the baud rate '5'(35h) The prefix characters of the third track";", "+"selector switch '6' (36h) Whether to allow framework characters '7' (37h) Whether to plus the Enter '8' (38h) Read device configuration '9' (39h) Version NO. of read device ':' (3Ah) Read device status

7.2 Error Code List

Error Code Descriptions

'0' (30h) Normal execution '1' (31h) LRC error in communication '2' (32h) Command Error '3' (33h) Data error

7.3 Control Commands

7.3.1 Restore factory settings

HOST

Prologue field Information field Epilogue field HEADER LEN CLA INS LRC

60h 0002h 'C'(43h) '0'(30h) 11h 1 byte 2 byte 1 byte 1 byte 1 byte

WBM13X0

• Information field (CLA,INS): See section 6.1. for the Command code list .

WBM13X0

Prologue field Information field Epilogue field HEADER LEN EC LRC

60h 0001h ?? ?? 1 byte 2 byte 1 byte 1 byte

HOST

- Error code byte (EC): See section 6.2. for the Error code list .
- Factory default settings:

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Baud Rate:	9600 bps
Data length:	8-bit no parity
Startup bit:	1 bit
Stop bit:	I bit
The first track switch:	ON(1)
The second track switch:	ON(1)
The third track switch:	ON(1)
The prefix characters of the third track selector switch:	"+" (1)
Whether to allow framework characters:	Allow(1)
Whether allow to plus the carriage returns:	Allow(1)

7.3.2 The first track switch



Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	'C'(43h)	'1'(31h)	01/00	10h/11 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte



WBM13X0

Information field (CLA, INS): See section 6.1. for the Command code list .





Prologu	e field	Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??
1 byte	2 byte	1 byte	1 byte

^{*} Error code byte (EC): See section 6.2. for the Error code list .

7.3.3 The second track switch



Prologi	ae field	Information field			Epilogue field	
HEADER	LEN	CLA	INS	DATA	LRC	



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second track switch: ON(1) The third track switch: ON(1) The prefix characters of the third track selector switch: "+" (1) Whether to allow framework characters: Allow(1) Whether allow to plus the carriage returns: Allow(1)

7.3.2 The first track switch

HOST

Prologue field Information field Epilogue field HEADER LEN CLA INS DATA LRC 60h 0003h 'C'(43h) '1'(31h) 01/00 10h/11 h 1 byte 2 byte 1 byte 1 byte 1 byte 1 byte

WBM13X0

• Information field (CLA, INS): See section 6.1. for the Command code list .

WBM13X0

Prologue field Information field Epilogue field

HEADER LEN EC LRC

60h 0001h ?? ?? 1 byte 2 byte 1 byte 1 byte HOST

* Error code byte (EC): See section 6.2. for the Error code list .

7.3.3 The second track switch

HOST

Prologue field Information field Epilogue field HEADER LEN CLA INS DATA LRC

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60h	0003h	'C'(43h)	'2'(32h)	01/00	13h/12 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte

WBM13X0

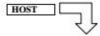
Information field (CLA, INS): See section 6.1. for the Command code list.



Prologu	e field	Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	22	22
1 byte	2 byte	1 byte	1 byte

^{*} Error code byte (EC): See section 6.2. for the Error code list .

7.3.4 The third track switch



Prologu	Prologue field		Information field		
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	'C'(43h)	'3'(33h)	01/00	12h/13 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte



WBM13X0

WBM13X0

Information field (CLA, INS): See section 6.1. for the Command code list.



Prologue field		Information field	Epilogue field	
HEADER	LEN	EC	LRC	
60h	0001h	??	22	
1 byte	2 byte	1 byte	1 byte	

^{*} Error code byte (EC): See section 6.2. for the Error code list .

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WBM13X0

• Information field (CLA, INS): See section 6.1. for the Command code list .

WBM13X0

Prologue field Information field Epilogue field

HEADER LEN EC LRC

60h 0001h ?? ?? 1 byte 2 byte 1 byte 1 byte HOST

* Error code byte (EC): See section 6.2. for the Error code list .

7.3.4 The third track switch

HOST

Prologue field Information field Epilogue field HEADER LEN CLA INS DATA LRC 60h 0003h 'C'(43h) '3'(33h) 01/00 12h/13 h 1 byte 2 byte 1 byte 1 byte 1 byte 1 byte

WRM13X0

• Information field (CLA, INS): See section 6.1. for the Command code list .

WBM13X0

Prologue field Information field Epilogue field

HEADER LEN EC LRC

60h 0001h ?? ?? 1 byte 2 byte 1 byte 1 byte HOST

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^{*} Error code byte (EC): See section 6.2. for the Error code list .



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7.3.5 Set the baud rate



Prologu	Prologue field Information field		1	Epilogue field	
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	'C'(43h)	'4'(34h)	? ?	? ?
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte



WBM13X0

Information field (CLA, INS): See section 6.1. for the Command code list.

Prologue field Information field Epilogue field



Prologu	e field	Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	72	99
1 byte	2 byte	1 byte	1 byte

^{*} Error code byte (EC): See section 6.2. for the Error code list .

*Data : setting baud rate

Data	Baud rate
31	4800
32	9600
33	19200
34	38400
35	57600
36	115200

HOST

Prologue field Information field Epilogue field HEADER LEN CLA INS DATA LRC 60h 0003h 'C'(43h) '4'(34h) ?? ?? 1 byte 2 byte 1 byte 1 byte 1 byte 1 byte

WBM13X0

• Information field (CLA, INS): See section 6.1. for the Command code list .

Prologue field Information field Epilogue field

WBM13X0

HEADER LEN EC LRC

60h 0001h ?? ?? 1 byte 2 byte 1 byte 1 byte HOST

* Error code byte (EC): See section 6.2. for the Error code list .

*Data : setting baud rate

Data Baud rate

31 4800 32 9600 33 19200 34 38400 35 57600 36 115200

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