NEW PEBBLE CARD PRINTER

Programming Guide

P/N: A5013- Rev. D2

Table of Contents

1. Communication Interface

The printer uses by default a standard parallel with a Centronics cable wiring as described below :

Pin number	Signal	Direction
1	STROBE	IN
2	Data 0	IN
3	Data 1	IN
4	Data 2	IN
5	Data 3	IN
6	Data 4	IN
7	Data 5	IN
8	Data 6	IN
9	Data 7	IN
10	ACK	OUT
11	BUSY	OUT
12	PAPER-END	OUT
13	SELECT	OUT
14	AUTO-FEED	IN
31	INIT	IN
32	FAULT	OUT
36	SELECT IN	IN
19-30	Ground	#

The communication is standard using the 8 data entries (DATA0 to DATA7) as well as the BUSY and STROBE signals.
The INIT signal of the Centronics allows to reset the printer.

Error Cases:

1- All the minor errors (syntax error, command errors, …) will not be reported to the printer.

2- The media errors (No cards or End of Ribbon) will be reported via the BUSY and PAPER-END signals.

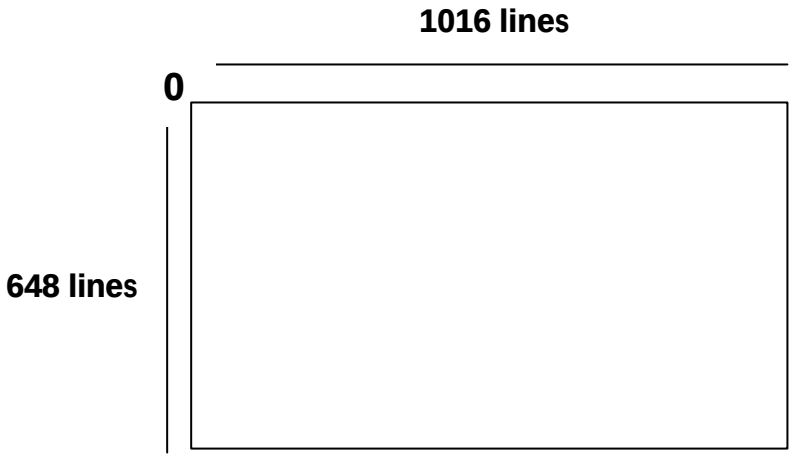
3- The mechanical errors (jam or other) will be reported via the BUSY and FAULT signals.

Information from the printer:

The printer is able to return a string of characters using the NIBBLE protocol mode.

2- General Working

The printer is equipped with 5 different Bitmaps which allow to re-print a card further to a media error. These Bitmaps memorize the following image size with a resolution of 300 DPI :



3- Communication Protocol

The Evolis Pebble Card Printers have an intemal programming language.
The command syntax is defined as follow:

(Start Character) Command (Stop Character)

The commands can get parameters and can be finished by a character string or data.
Each element of the command must be separated by a separator character:

(Start Character) Command (separator) parameter 1 (separator) parameter n (Stop Character)

Start Character:	ESC
Separator:	;
Stop Character:	CR

Note: the Start Character is not compulsory after the CR character.

4- Data compression

In order to optimize the downloading time, Evolis has added a new transmission mode with compression of the data.

Definition of the compression:

Compression of the YMC Pannels:
The (MSB) bit of each byte is reserved for the interpretation of a counter or not.

- If the bit is set to 1, the other 7 bits will indicate the weight of the bit to be applied. The following byte indicates a value of repetitive counter. If the value of this counter is egal to zero, we consider the line as blank. If the value of the counter is different to 0, we repeat the byte the number of time of the counter.In the case of the modes with 6 bits or 5 bits, the bits 6 and 5 of the first bytes are used to increase the counter value.
- If this bit is egal to 0, the other 7 bits will indicates the weight of the bit to be applied. This is an isolated dot in the line.

Bit8 at zero

Writing 1 point Y, M or C.

0	Value on 5,6 or 7 bits

Bit8 at one

Writing counter point Y,M or C.

In 7 bits (128 levels) counter max= 255

1	Value to be repeated x counter times	Counter

In 6 bits (64 levels) counter max= 256+255

1	If 1 ctp+256	Value to be repeated x counter times	Counter

In 5 bits (32 levels) counter max= 256+256+255

1	If 1 ctp+256	If 1 ctp+256	Value to be repeated x counter times	Counter

Writing of a white line for Y,M or C

1	Counter = 0	0x 00

Compression of K and O :
The compression is done line per line.
If the first byte describing a line is egal to 0, it means that the line is white.
If the first byte describing a line is egal to 255, it means that the line is black.
If the line is not white and not black, the first byte indicates the number of byte(s) useful of the line.
This counter is followed by the useful bytes. The counter corresponds to the index of the last byte of the line.

Byte egal to 0. White line

0x00

Byte egal to 255. Black line

0xFF

Byte with value between 1 & 81. Indicates the number of useful bytes of the line.

1 to 81 (N)	Byte1	Byte2	…..	ByteN

Downloading Command:

(ESC)Dbc ;panel ;resol ;nb_car;xxxx(CR)

With panel :
- y → Yellow Panel
- m → Magenta Panel
- c → Cyan Panel
- k → Black Panel
- o → Overlay Panel

With resol:
- 2 → 2 levels of grey
- 32 → 32 levels of grey
- 64 → 64 levels of grey
- 128 → 128 levels of grey

With nb_car: Number of bytes to follow

5- Program the Printer Serial Ports

By default, the printer serial ports are disable.
The following command will set the serial port configuration and will memorize the protocol of communication, even after turning printer power on/off.

(ESC)Pcom;p1;p2;p3;p4;p5;o1;o2(CR)

p1:	1	Serial Port n)1 of the printer
	2	Serial port n)2 of the printer
p2:	From 2400 to 115200	Port Speed
p3:	N	No parity
	O	Odd parity
	E	Even parity
p4:	1 or 2	Number of Stop Bit
o1:	0 or NONE	No protocol (default value)
	XON/XOFF	Soft Protocol
	RTS/CTS	Material Protocol
	BOTH	Soft and Material Protocols
	ACK/NACK	Ack/Nack Protocol with simplified answer
o2:	0 or E	Enable Port
	R	Enable Port for reception, disable transmission (except for xon/xoff characters)
	D	Disable Port

CAUTION:

- The Com2 of the printer can not get the Material Protocol.
- If the Printer Port Com1 is set with the Materail Protocol, therefore the Com2 will automatically be disable.
- In case of using the ACK/NACK Protocol, the printer will automatically become a SLAVE (Computer = MASTER).

Example: (ESC)Pcom;1;9600;N;8;1(CR)
→ Com1 is set to 9600,N,8,1, eanble without any protocol.

(ESC)Pcom;2;115200;N;8;1;XON/XOFF;R(CR)
→ Com2 is set to 115200,N,8,1 with a XON/XOFF protocol without feed back of character on the serial port.

Command to read the configuration of the port: (ESC)Rcom;com(CR)

Definition of the ACK/NACK Protocol:

As soon as this protocol is set, the printer will answer in the following way:

When a command is sent correctly, the printer will answer the character : ACK
If the string of characters has been transmitted, the ACK character is transmitted to indicate that the command has been properly sent.
In case of errors, the printer returns the following: NACK code

When code is:	1	Command Error
	2	Parameter Error
	T	Time-Out Error, Mechanical Error
	C	Cover Open Error
	F	Feeder Error
	R	Ribbon Error
	K	Magnetic Checksum Error
	D	Magnetic Data Error
	W	Writing Magnetic Data Error

6 – Printer Command Summary Table

A – Adjustment Commands

Syntax	# Parameter(s)/Option(s)	Description	Page #
Ase	p1;p2	Adjusts the sensor potentiometers	Page 10

D – Downloading Commands

Syntax	# Parameter(s)/Option(s)	Description	Page #
Dbp	p1;p2;p3;p4	Partial downloads of a color Bitmap	Page 11
Dbpc	p1;p2;p3;p4	Partial downloads of a compressed color Bitmap	Page 11
Dbmp	p1;p2;p3;p4;Bitmap file	Downloads a logo in the Monochrome Bitmap	Page 11
Db	p1 ;p2 ;data	Downloads a Bitmap	Page 12

M - Motor Commands

Syntax	# Parameter(s)/Option(s)	Description	Page #
Mc	p1;p2	Runs Step Motor	Page 13
Mf	p1	Runs Feeder Motor	Page 13
Mh	P1	Runs Up & Down Motor	Page 13
Mr	p1	Runs Ribbon Motor	Page 13

P - Parameter Commands

Syntax	# Parameter(s)/Option(s)	Description	Page #
Pbm	p1	Sets Monochrome Bitmap Printing Mode	Page 14
Pc	p1;p2;p3	Sets Color Contrast Value	Page 14
Pem	p1 ;o1	Sets Errors Management	Page 15
Pkn	p1	Sets Print Head Kit Number	Page 15
Pl	p1;p2;p3	Sets Color Luminosity Value	Page 16
Pmk	p1;o1	Sets the speed for card insert/eject	Page 16
Pms	p1 ;p2	Sets Speed Motor Parameter	Page 16
Pnl	p1 ;p2	Sets Number of Lines to be printed	Page 17
Pnw	val	Sets Number of Lines to be printed in Y Orientation	Page 17
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Ps	p1;p2;p3	Sets Printing Speed Parameter	Page 18
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Py	p1;p2	Sets Vertical Offset Parameter	Page 19
Pwb			Page 19
Pwm	p1	Sets the Printing Mode	Page 19
Pwr	p1	Sets Text Orientation	Page 20

R - Read Commands

S - Sequence Commands

W - Write Commands

7 – Printer Command Definition

A – Adjust Commands

Ase;p1;p2 (Adjust sensor)

Adjusts the value of the potentiometers to set the emission current

p1 :
- c — Color Sensor (Blue LED).
- m — Magnetic or Feeder Stop (first sensor with forks)
- o — Cover opening
- p — Card presence (second sensor with forks)
- r — Perforated disk rotation

p2 : Value from 0 to 255

Example: (ESC)Ase;c;150(CR) for the Color Sensor.

D – Downloading Commands

Dbp;p1;p2;p3;p4 (Downloading bitmap partial)

Partial Download of a Color Bitmap.

For the 5 Half-Panel Color Ribbon Printing.

Standard Download Mode:

p1:	y	Yellow Panel
	m	Magenta Panel
	c	Cyan Panel
p2:	32	32 Levels
	64	64 Levels
	128	128 Levels

p3: from 0 to 1015 (Start of printing)

p4: Max 420 (number of lines to download)

Dbpc;p1;p2;p3;p4 (Downloading bitmap partial compressed)

Partial Download of a Compressed Color Bitmap.

For the 5 Half-Panel Color Ribbon Printing.

Compressed Download Mode:

p1:	y	Yellow Panel
	m	Magenta Panel
	c	Cyan Panel
p2:	32	32 Levels
	65	64 Levels
	128	128 Levels

p3: from 0 to 1015 (Start of printing)

p4: Number of bytes to download

Dbmp;p1;p2;p3;p4;Bmp file (Downloading mono bitmap)

Downloads a monochrome Bitmap.

p1 :	Destination of the Bitmap :	k for black monochrome Bitmap
		o for overlay Bitmap
p2:	Position of the logo in x	
p3:	Position of the logo in y	
p4:	Parameter for future application – always input 0	
Bmp File:	transmit the full Bmp file	

Note: the rotation command (ESC)Pwr;90(CR) is available for the logo.

D – Downloading Commands

Db;p1;p2;data (Downloading bitmap)

Downloads a color of a Bitmap.

Each time the total size of a Bitmap is downloaded (1016 * 648).Three different compression format exist to perform it : 5, 6 or 7 bits.

p1 (color) :	y :	Yellow.
	m :	Magenta.
	c:	Cyan.
	k:	Black Resin
	o:	Overlay
p2 :	2 :	2 bits (2 levels)
	32 :	5 bits (each color is coded on 5 bits)
	64 :	6 bits (each color is coded on 6 bits)
	128 :	7 bits (each color is coded on 7 bits).

Depending on the p2 parameter, the data will be concatenated in a way that each bit is useful.

For the Panels K and O :	2 levels of gray	1 byte = 8 pixels
For the Panels Y,M and C :	128 levels of gray	7 byte = 8 pixels

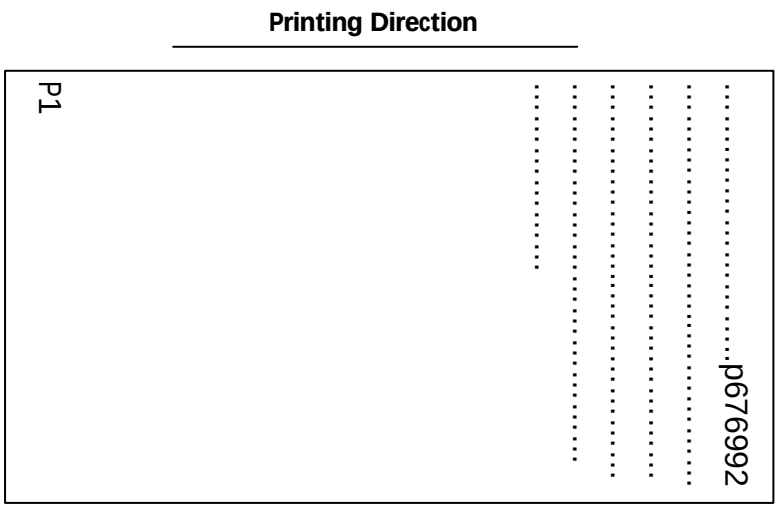
Note: the downloading will always be of 648 pixels by 1016 pixels.

Depending on the used concatenation, you will obtain the following:

Nb_= 648 * 1016 * (nb_pixel_useful) /8

For 2 levels of gray	84 624 bytes
For 32 levels of gray	423 120 bytes
For 64 levels of gray	507 744 octets
For 128 levels of gray	592 368 octets

The downloading will be performed in the following order :



This is a representation of the downloading of 648x1016 points = 676992 pixels (p1 being the first transmitted pixel).

Example : Db ;y ;6 ;xxxxxxxxxxxxxxx…….. downloads the Yellow Panel.

M – Motor Commands

Mc;p1;p2 (Motor card)

Runs Step Motor

p1 : Orientation Direction

+	Card Movement from Feeder via Output Hopper
-	Card Movement from Output Hopper to Feeder

p2 : Number of performed steps

Mf;p1 (Motor feeder)

Runs Feeder Motor

p1 : Orientation Direction

+	Clockwise
-	Anti-clockwise
!	Stops Motor

Mh;p1 (Motor head)

Runs Print Head Motor

p1 : Orientation Direction

+	Print Head in High Position
-	Print Head in Low Position
=	Magnetic Head or Smart Card Contacts position for encoding

Mr;p1;o1 (Motor ribbon)

Runs Ribbon Motor

p1 : Orientation Direction

-	Rewinds Ribbon
+	Unwinds Ribbon
!	Stops Motor
i	Sets Ribbon Position at the beginning of the Yellow Panel
n	Moves to the beginning of the next Panel
=	Advances ribbon with the number of flags defines by o1

o1 : Number of flags (144 = 1 complete turn)

P – Parameter Commands

Pbm;p1 (Parameter bitmap mode)

Sets Monochrome Bitmap Printing Mode.

p1 :	p	Standard Printing Mode
	p2	Specific Mode for Picture Printing
	b	Barcode Printing Mode

Pc;p1;p2;p3 (Parameter contrast)

Sets Color Contrast Value to be printed

p1 :	y	Yellow
	m	Magenta
	c	Cyan
	kb	Black Monochrome
	kw	White Monochrome
	kr	Red Monochrome
	kbl	Blue Monochrome
	kgr	Green Monochrome
	kgo	Gold Monochrome
	ksi	Silver Monochrome
	ksc	Scratch Off Monochrome
	o	Overlay
	a	All the colors

Default Contrast Value : 10

p2 :	+	Increase the current value
	-	Decrease the current value
	=	Value to be applied if p2 present. If not, factory default value will be applied

p3 : Optional
Increased Value / Decreased Value or Value to apply

Example : Pc;m;+ (increases of 1 the magenta contrast value)

P – Parameter Commands

Pem;p1;o1 (Parameter error management)

Sets the error management on the Parallel Port.

p1 :
1 Host Computer + opening cover detection disable
2 Host Computer
3 Host Computer + BUSY Signal not forced in case of error (Centronic)
4 Does not change the previous Pem value but it sets the ACK/NACK Mode
5 Does not change the previous Pem value but it sets the function "retrieve error" in case of magnetic encoding error

If p1 is egal to some other values, different modes are allowed as described below:

bit1 0 Host Printer / 1 Host Computer
bit2 0 detection of cover opening / 1 cover opening not managed
bit3 0 BUSY Centronic is forced to 1 in case of error / 1 BUSY non forced
bit4 0 Standard Protocol / 1 ACK/NACK Protocol
bit5 0 Standard Error Managment / 1 Error Retrieve on ERR_MAGN

Further a swicth ON/OFF of the printer, the following parameter becomes nul:
- Host Printer, opening cover enable, BUSY forced, Standard Protocol

o1: s The memorized value is downloaded in the saved memory and will be therefore re-loaded each time the printer power will be switch on.

Pkn;p1 (Parameter kit number)

Sets Print Head Kit Number

p1 : XXXYYYYYY
XXX = Print Head Resistance Value x 10
YYYYYY = Serial Number

This value is only considered if the first three digits are numeric. If not numeric, the management will be made by the **Phr** command.

P – Parameter Commands

Pl;p1;p2;p3 (Parameter luminosity)

Sets Luminosity Value for the printing

p1 :
- y yellow
- m magenta
- c cyan
- a all 3 colors

p2 :
- \+ increases the resident value
- \- decreases the resident value
- = Value to be applied if p3 is present.

p3 : Optional
Increasing Value / Decreasing Value or Value to apply

Pmk;p1;o2 (Parameter mode black) – printing speed

Sets Monochrome Printing Speed Mode Types.

p1 :
- s Standard Printing Speed Mode
- f Fast Printing Speed Mode
  (Synchronization of the card inside the printer and card movements are optimized)

o1:
- s Standard Card ejection
- i New card is inserted when a card is ejected

By default, the =printer is set in Standard Printing Speed Mode, with Card ejection standard and with enable Ribbon Detection .

Pms;p1;p2 (Parameter motor speed)

Sets Step Motor Speed Parameter.

p1 :
- \+ Increases the current value
- \- Decreases the current value
- = Sets the value

p2 : Value to be added, deducted or set

P – Parameter Commands

Pnl;p1;p2 (Parameter number line)

Sets the Number of lines to be printed

p1 :

+	Increases the current value
-	Decreases the current value
=	Sets the value

p2 : Value to add, to deduct or to set

Pnw;val (Parameter number write)

Sets the Number of lines to be printed in Y orientation.

Example: (ESC)Pnw;val(CR)

Ppn;p1 (Parameter parallel negociation)

Enables and disables the bi-directional parallel mode.

p1 :

0	Standard Mode – Authorized Negotiation
1	No Negotiation

Pr ;p1 (Parameter ribbon)

Sets the Ribbon Type.

p1 :

ymcko	5 Panel Color Ribbon
ymckos	5 Half-Panel Color Ribbon
kb	Black Monochrome
kw	White Monochrome
kr	Red Monochrome
kbl	Blue Monochrome
kgr	Green Monochrome
kgo	Gold Monochrome
ksi	Silver Monochrome
ksc	Scratch Off Monochrome
ko	Two Panel Ribbon (Black TT + Varnish)
h	Hologram Ribbon (full Bitmap)
ho	Hologram Ribbon using the B&W Bitmap

P – Parameter Commands

Prm;p1 (Parameter ribbon management)

Sets Ribbon Synchronization Management.

p1 :	0	Standard Ribbon Synchronization Management (each time cover is closed when power ON)
	1	No ribbon auto-synchronization when closing the cover. Done only when printing.
	2	Ribbon will synchronize when turning power ON and after a printing is required
	3	(p1=1) + (p1=2)

Pro ;p1 (Parameter offset ribbon)

Sets the Offset Ribbon Parameter.

p1 : Distance of the ribbon offset in dots (Default Setting Parameter: 552)

Ps ;p1;p2;p3 (Parameter speed)

Sets Printing Speed Value

p1 :	y	yellow
	m	magenta
	c	cyan
	k	monochrome
	o	overlay
p2 :	+	Increases the current value
	-	Decreases the current value
	=	Value to apply if p3 is present.
p3 :	Optional	Increasing Value / Decreasing Value or Value to apply

Psc ;Start;Sep;End (Parameter sequence command)

Sets Characters to be used for command definition.

Start: The new Start Character
Sep: The new Separator Character
End: The new End Character

To come back to the default parameters, send command: (ESC)Psc(CR)

Default Setting Values:	Start:	27 (ESC)
	Separator:	59 (;)
	End :	13 (CR)

Example:	When:	(ESC)Psc;60;47 ;62(CR)		
	Result :	<Pco/=/10>	instead of	(ESC)Pco;=;10(CR)

P – Parameter Commands

Px;p1;p2 (Parameter X offset)

Sets the X Offset Value

p1 : + Increases the current value
- Decreases the current value
= Set the value

p2 : Value to add, to subtract or to set

Py;p1;p2 (Parameter Y offset)

Sets the Y Offset Value

p1 : + Increases the current offset value
- Decreases the current offset value
= Sets the value

p2 : Value to add, to subtract or to set

Pwb ;p1 (Parameter write bitmap)

Writes Monochrome Bitmap

p1 : k writes the Black & White Bitmap
o writes the Overlay (varnish) Bitmap

Note: each time the printer is switched ON, the the Black & White Bitmap becomes the current one.

Pwm;p1 (Parameter write mode)

Sets Monochrome Printing Mode.

p1 : s Standard Mode
n Video Inverse Mode

Further a changing of mode, all the texts and logos commands will be memorized according to the new mode.

P – Parameter Commands

Pwr;p1 (Parameter write rotation)

Sets Monochrome Text Rotation.

p1 :

0	Rotates 0° the text clockwise
90	Rotates 90° the text clockwise
180	Rotates 180° the text clockwise
270	Rotates 270° the text clockwise

Example:

```
Wcb;k
Ss
Pwr;0
Wt;100;300;0;10;Test Rotations
Wt;500;250;0;50;0
Pwr;90
Wt;500;250;0;50;90
Pwr;180
Wt;500;250;0;50;180
Pwr;270
Wt;500;250;0;50;270
```

R – Read Commands

Rbm (Read black mode)

Reads the selected Monochrome Printing Mode Type.

Rc ;p1 (Read contrast parameter)

Reads the Contrast Value.

p1 :	y	Yellow
	m	Magenta
	c	Cyan
	k	Current selected Monochrome Ribbon
	o	Overlay
	a	All colors

Rck (Read checksum firmware)

Reads Firmware Checksum Value.

Rco;p1 (Read counter)

Reads the Counters Values.

p1 :	p	Number of printed panels
	c	Number of inserted cards
	a	Average cleaning frequency
	m	Maximum frequency between two cleanings
	n	Number of performed cleanings

Rem (Read error management)

Reads the Error Management Mode.

It returns two values:

First value: Current Mode
Second value: Saved Mode which is re-loaded each time the printer power is switch on.

R – Read Commands

Rfv (Read firmware version)

Reads Firmware Version.

Rfn (Read font name)

Reads the resident font name.

When: 0 Arial Normal 100 (in dots)
1 Arial Bold 100 (in dots)

Reminder: 1mm = 11,8 dots

Rkn (Read kit number)

Reads Print Head Kit Number.

Rks (Read kresin Shift)

Reads Black Resin Compensation Value.

Rl;p1 (Read luminosity)

Reads Luminosity Value for each color.

p1 : y Yellow
m Magenta
c Cyan

Rmk (Read mode black)

Reads Monochrome Printiong Speed Mode.

Rms (Read motor speed)

Reads Step Motor Speed.

Rnl (Read number line)

Reads the number of printed lines.

Rnw (Read number write)

Reads the number of printed lines in the Y orientation.

R – Read Commands

Rpn (Read parallel negotiation)

Reads if the parallel bi-directional mode is enable or disable.

When answer : 0 = Standard – Authorized Negotiation
1 = No Negotiation

Rps;p1 (Read potentiometer sensibility)

Reads Potentiometer Sensors Value.

p1:
- c Color Sensor (Blue LED)
- m Magnetic or Stop of the Feeder (first sensor with forks)
- o Cover Opening
- p Card Present (second sensor with forks)
- r Coded Disk rotation

Rrm (Read ribbon management)

Reads the Ribbon Synchronization Management

If reading:
- 0 Standard Ribbon Synchronization Management (each time cover is closed when power ON)
- 1 No ribbon auto-synchronization when closing the cover. Done only when printing.
- 2 Ribbon will synchronize when turning power ON and after a printing is required
- 3 (p1=1) + (p1=2)

Rro (Read ribbon offset)

Reads the Offset Ribbon Value.

Rs;p1 (Read speed)

Reads the Printing Speed Value for one color

p1 :
- y Yellow
- m Magenta
- c Cyan
- k Monochrome
- o Overlay

Rsc (Read sequence command)

Reads the characters used for command definition.

R – Read Commands

Rse;p1 (Read sensor)

Reads the Sensors Voltage.

p1 :

c	Color Sensor (Blue LED)
m	Magnetic Sensor or Feeder Stop Sensor (first sensor with forks)
o	Cover Opening Sensor
p	Presence Card Sensor (second sensor with forks)
r	Coded Disk Rotation Sensor

Rsn (Read serial number)

Reads the Printer Serial Number.

Rtp (Read type printer)

Reads the printer type (model).

Rx (Read X offset)

Reads the X Offset Value (Horizontal).

Ry (Read Y offset)

Reads the Y Offset Value (Vertical).

S – Sequence Commands

Sa;o1 (Self adjustment)

Runs the Printer Self Adjustment

Without adding optional parameters after the Sa command, the printer will adjust the functionalities in the following order :

1. Card Positioning
2. Ribbon Rotating
3. Cover Opening
4. Color Sensors
5. Magnetic Board (if a MAG Encoder has been detected)

The functionalities can also be adjusted one by one adding an optional parameter after the **Sa** command:

o1 :	p	Card Positioning
	r	Ribbon Rotating
	o	Cover Opening
	c	Color Sensors
	i	Magnetic Board (if a MAG Encoder has been detected)

Sc (Sequence copy)

Runs a copy of the latest list of commands included between Ss and Se

Scp (Sequence clean printer)

Runs a printer cleaning cycle.

- Checks if there is no ribbon in printer
- Inserts a cleaning card and moves it five times forward and backward underneath the transport rollers and the print head
- If a magnetic encoder is detected, a cleaning of the magnetic head will be performed
- Ejects the cleaning card

Se (Sequence end)

Indicates the end of a command started by a Ss, a Si or a Sr. The card is ejected.

S – Sequence Commands

Si (Sequence insertion)

Inserts a card into the printer.

The card is placed in the position of synchronization before a printing.

Sib (Sequence insertion back)

Inserts a card from the back of the printer

The card is placed in the position of synchronization before a printing.

Sp;p1 (Sequence Print)

Prints a Panel

p1:	y	Yellow Panel
	m	Magenta Panel
	c	Cyan Panel
	k	Black Resin Panel
	o	Overlay Panel

Ss (Sequence start)

Indicates the beginning of a command sequence.

Ssd (Sequence simulation downloading)

Runs the simulation of the downloading of a panel.

p1:	y	Yellow Panel
	m	Magenta Panel
	c	Cyan Panel
	k	Black Resin Panel
	o	Overlay Panel

This command is useful when it is necessary to print one panel without downloading it.

Below an example which allows to print a color card using 4 panels (YMCO). In case of error during the printing process, the printer re-starts the printing job once before releasing the parallel port.

Example:

```
Ss
Ssd;y
Ssd;m
Ssd;c
Ssd;o
Se
```

S – Sequence Commands

St (Sequence test)

Runs a printing of the Printer Test Card

Stt;o1 (Sequence technical test)

Runs a printing of the Printer Technical Test Card

o1 : m Runs a Magnetic Encoder Technical Test Card (if a MAG Encoder is present)

W – Write Commands

Wb;p1;p2;p3;p4:p5;p6;p7;data (Write Barcode)

Write a barcode.

p1: position of the barcode on x
p2: position of the barcode on y
p3: Barcode type: c39 = code 39 barcode
2/5 = 2/5 interleaved barcode
p4: Ratio of the barcode: 12 = ration 12
13 = ratio 13
25 = ratio 25
p5: Multipler coefficient of the bars
p6: Height of the barcode
p7: Activation of the data value 0 = no visible value
1 = visible value (standard size, 3mm high)
Other value = the value input will be the high of the value
Data: Data to be input for the barcode

Example: Wb;300;300;c39;12;4;100;1;TEST

Application note: the barcode can be used in any orientations as well as in video inverse.

Wcb;p1;p2 (Write clear bitmap)

Clears a Bitmap.

p1:
y Yellow Bitmap
m Magenta Bitmap
c Cyan Bitmap
k Black Resin Bitmap
o Overlay Bitmap
a All Bitmaps

p2: Optional parameter
From 0 to 255 (all the bytes are set according to the defined value).

Application Note : Wcb;o;255 Allows to print full Varnish Panel.

This is easier to use this command to print a full Varnish Panel than using the Db;…;… command.

Wl;p1;p2;p3;p4;p5 (Write line)

Writes Monochrome Line in Bitmap.

p1: Position in x of the line
p2: Position in y of the line
p3: Lenght of the line in dots (in the x direction)
p4: Width of the line in dots (in the y direction)
p5: 0 to erase the line
1 to write the line

Reminder: 1mm = 11.8 dots

Note: the command of rotation can not be used with this command.

W – Write Commands

Wt (Write text)

Writes Monochrome Text in Bitmap.

Syntax: (ESC)Wt ;x ;y ;p ;h;data(CR)

x : Position of the text in x
y : Position of the text in y
p: Font Type : 0 = Arial Normal 100 (in dots)
1 = Arial Bold 100 (in dots)
h: Font Height in dots

Reminder: 1mm = 11.8 dots

8 – Mag. Encoding Command Summary Table

D – Downloading Commands

Syntax	Parameter/Option	Description	Page #
Dm	p1; data	Downloads Magnetic Data	Page 31

P – Parameter Commands

Syntax	Parameter/Option	Description	Page #
Pmbs	p1	Sets Start Coding Value for all three tracks	Page 32
Pmc	p1	Sets Coercivity Value	Page 32
Pmd	p1	Sets Track Density Value (in BPI)	Page 32
Pml		Sets Magnetic Encoding Length	Page 32
Pmt	p1 ; p2	Sets the ISO Track Format	Page 32
Pmts	p1 ; p2	Sets Coding Start value for one track	Page 33

R – Read Commands

Syntax	Parameter/Option	Description	Page #
Rmbs		Reads Start Magnetic Coding Default Value	Page 34
Rmc		Reads Coercivity Value	Page 34
Rmd		Reads Track Density Value (in BPI)	Page 34
Rml		Reads Magnetic Encoding Length	Page 34
Rmms		Reads Encoding Speed	Page 34
Rmt	p1	Reads the ISO track format	Page 34
Rmts	p1	Reads the coding Start value	Page 34

S - Sequence Commands

Syntax	# Parameter/Option	Description	Page #
Smr	p1	Reads Magnetic Tracks	Page 35
Smw	p1	Writes Magnetic Tracks	Page 35

9 – Mag. Encoding Command Definition

D – Downloading Commands

Dm;p1;data (Downloading magnetic)

Downloads the data to be encoded.

p1 : 1 Track 1
2 Track 2
3 Track 3

Data : ASCII Data to be encoded

P – Parameter Commands

Pmbs;p1 (Parameter magnetic base start)

Sets the magnetic distance parameter from the card sensor before an encoding

p1 : Distance in dot (Default: 512)

Pmc;p1 (Parameter magnetic coercivity)

Sets the Coercivity Value

p1 :	h	High Coercivity
	l	Low Coercivity

Pmd;p1 (Parameter magnetic density)

Sets the Track Density Value

p1 :	75	75 bits per inch
	210	210 bits per inch

Pml;p1 (Parameter magnetic length)

Sets the length parameter of the magnetic encoding

p1 : Length in dots (Default 1032)

Pmt;p1;p2 (Parameter magnetic track)

Sets the ISO Format per track

p1 :	1	Track 1
	2	Track 2
	3	Track 3
p2 :	1	ISO 1
	2	ISO 2
	3	ISO 3
	4 or C1	SIPASS
	5 or C2	CUSTOM 8 bits
	6 or C4	CUSTOM 4 bits/reverse

The 4 bits reverse Mode works in the same way as the 8 bits one but it will encode the 4 bits in the inverse way (4,3,2,1 instead of 1,2,3,4).

P – Parameter Commands

Pmts;p1;p2 (Parameter magnetic track start)

Sets the start distance value of the track coding (per track)

p1 : 1 Track 1
2 Track 2
3 Track 3

p2 : Value in dot(s) for the start of the coding (default value: 24)

R – Read Commands

Rmbs (Read magnetic base start)

Reads the advance distance value after the detection of the card before an encoding.

Rmc (Read magnetic coercivity)

Reads the coercivity value.

Rmd;p1 (Read magnetic density)

Reads the Track Density

p1 : 1 Reads Density for Track Number 1
2 Reads Density for Track Number 2
3 Reads Density for Track Number 3

Rml (Read magnetic length)

Reads the Magnetic Encoding Length.

Rmms (Read magnetic motor speed)

Reads the Step Motor Value for the Magnetic Encoding.

Rmt,p1 (Read magnetic track)

Reads the ISO Track Format (if ISO1, ISO 2 or ISO 3)

p1 : 1 Reads Format for Track 1
2 Reads Format for Track 2
3 Reads Format for Track 3

Rmts,p1 (Read magnetic track start)

Reads the start distance value of track coding

p1 : 1 Reads Distance for Track 1
2 Reads Distance for Track 2
3 Reads Distance for Track 3

S – Sequence Commands

Smr;p1 (Sequence magnetic read)

Reads the Magnetic Tracks.

p1:
1 Reads Track Number 1
2 Reads Track Number 2
3 Reads Track Number 3

Smw (Sequence magnetic write)

Writes the Magnetic Tracks.

Depending the Dm command which has been sent previously, the track(s) are encoded.

10 – Smart Card Command Summary Table

P – Parameter Commands

Syntax	Parameter/Option	Description	Page #
Pos	p1 ;p2	Sets Offset for Smart Card Position	Page 37

R – Read Commands

Syntax	Parameter/Option	Description	Page #
Ros		Reads Smart Card Offset Value	Page 38

S – Sequence Commands

Syntax	Parameter/Option	Description	Page #
Sis		Inserts a Smart Card under Smart Card Contact Station	Page 39

11 – Smart Card Command Definition

P – Parameter Commands

Pos;p1;p2 (Parameter offset smart)

Defines the Offset for Smart Card position under the Smart Card Contact Station. The card moves with this determinable value to the Smart Card Contact Station when sending the Sis command.

The Offset default value is 1158 dots.

p1 : -
+
=

p2: Value of incremental or value to apply

Ex: **Pos;+;12** (12 dots will be added to the original value)
Pos;=;1400 (the original value will become 1400 dots)

R – Read Commands

Ros (Read offset smart)

Reads the smart card offset value.

S – Sequence Commands

Sis (Sequence insertion smart)

Insert a card in the printer. After detection by the card sensor, the card moves to the Smart Card Contact Station with a determinable offset value defined by the Pos command .
When the card is stopped under the Smart Card Contact Station, the printer activates a contact on PIN 9 of the DB-9 connector to inform the external reader/encoder that a card is connected to the Smart Card Contact Station.

12. Programming Example

1 - Printing a color card with a 5 Panel Color Ribbon (YMCKO)

(ESC)Pr;ymcko(CR)	Defines the type of ribbon
(ESC)Pc;y;+(CR)	Increases Yellow Contrast of 1
(ESC)Pc;m;+(CR)	Increases Magenta Contrast of 1
(ESC)Pc;c;+(CR)	Increases Cyan Contrast of 1
(ESC)Ss(CR)	Beginning of sequence
(ESC)Sr(CR)	Defines printing on the front of the card
(ESC)Db;y;32;data0……	Downloads the Yellow Panel
(ESC)Db;m;32;data0……	Runs the printing of the Yellow Panel and downloads Magenta Panel
(ESC)Db;c;32;data0……	Runs the printing of the Magenta Panel and downloads the Cyan Panel
(ESC)Db;m;2;data0……	Runs the printing of the Cyan Panel and downloads of the Black Panel
(ESC)Db;o;2;data0……	Runs the printing of the Black Panel and downloads the Overlay Panel
(ESC)Se(CR) ;	Prints the Overlay Panel and ejects the card