

Document Definition's Reference

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Overview

To define a form it is necessary to create a text file with a text editor. This text file has to contain the commands, which are described in the following. All command elements are required. The command elements in the following list are described either with 9, A or A*. 9 is valid for number input, A for letter input and A* is valid for string input.

The created text file will be transmitted to the reader by starting the A50 software and clicking on "Definition" button.

If you don't have this software you have to send an "I" to the reader, wait for acknowledge and then send each single command to the reader.

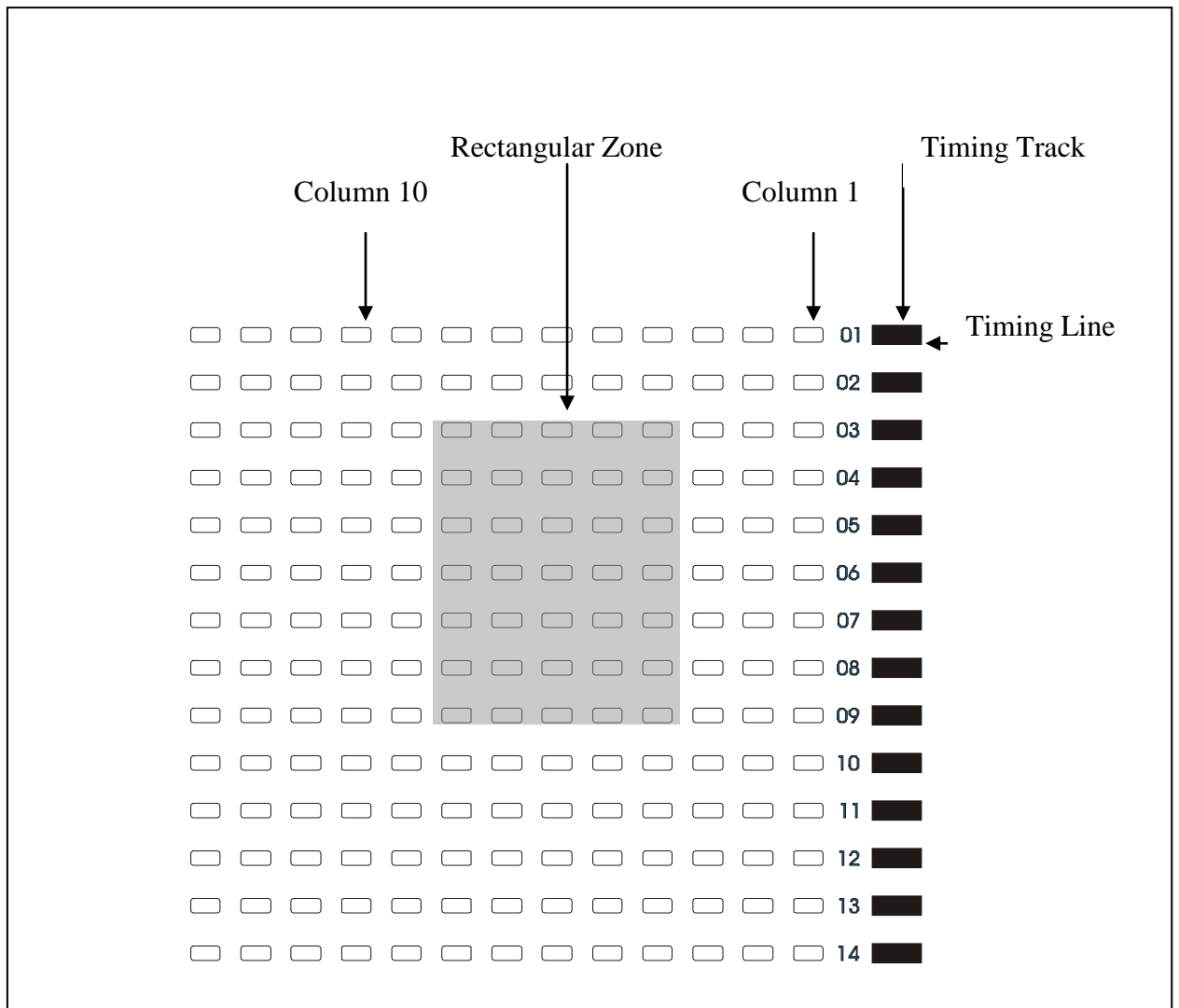
The reader acknowledges each correct command by transmitting the acknowledgement character to the host computer. If the command is incorrect, incomplete or after timeout the reader transmits an error character.

Acknowledgement character "ack" : 06h 0Dh
Error character "nack" : 15h

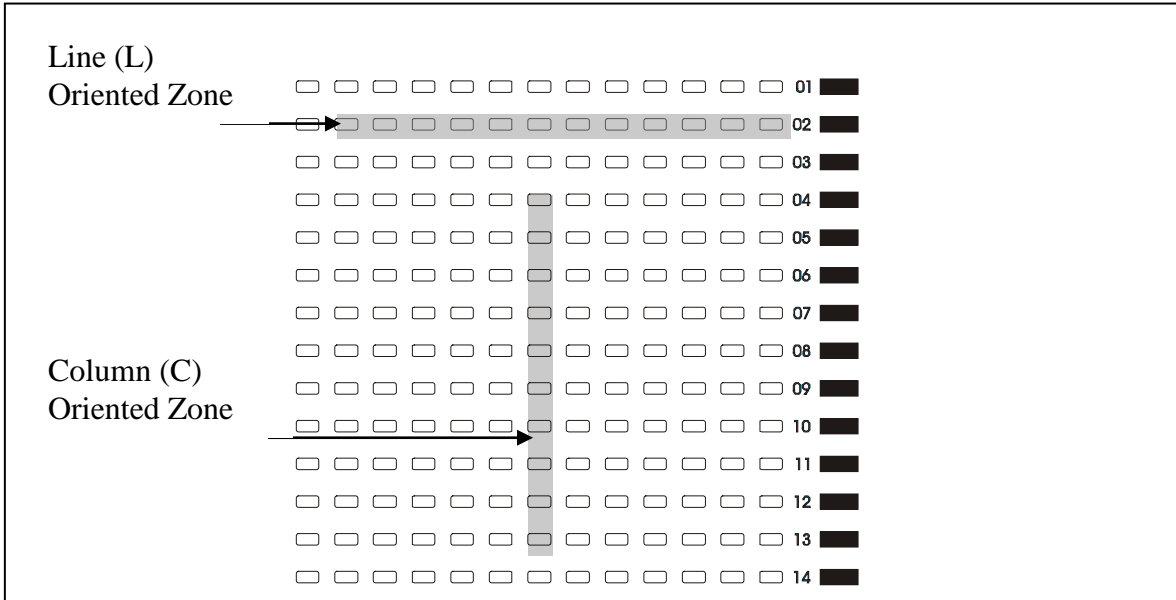
Timeout is 2 sec after every command.

Defining Zone Geometry

A clear understanding of zone layout and construction terms is essential to understand how to construct form translation commands. Relative positions on the form are described with a two-dimensional grid of timing lines and columns. The following figure shows some example translation zones on the two-dimensional grid.



If the choices with the same timing line number are located in different columns, the choices are line (L) orientated. If the choices are located on the same column, the choices are column (C) orientated. The figure illustrates both, a line oriented as well as a column-oriented zone.



Definitions-Command

- a. Reset command. Used to clear all previously downloaded form definitions:

C Command qualifier

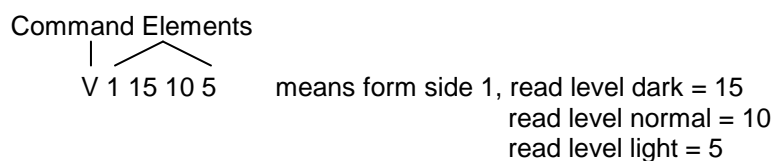
- b. Darkness command, to specify the threshold level for a light, normal, and dark marking

You can define a threshold level so that the reader can decide whether it is a light, normal or dark marking. The definition of normal and light threshold level is optional but, if it is not defined you can't read multilevel.

Level command

- V Command qualifier
 - Blank separator
 - 9 Form side (1 or 2)
 - Blank separator
 - 9 Number (1-15) read level light
 - Blank separator
 - (9) Number (1-14) read level normal
 - Blank separator
 - (9) Number (1-13) read level dark
- } necessary for multilevel

Example:



Sheet mess command

- D Command qualifier
- Blank separator
- 9 Thick in Percent (0,1 2 to 100)
 - 0 = control off
 - 1 = NO change
 - 2-100 thick
- Blank separator
- 9 Thick-Len in percent (0,1,2 to 100)
 - 0 = control off
 - 1 = NO change
 - 2-100 thick-len from sheet
- Blank separator
- 9 Sheet-len time (1,2 to 200)
 - 1 = NO change
 - 2-200 sheet-len in ms (value = sheet Len (mm) * 0.425)

c. Form start command, to open the download of a new form definition (must be defined):

- S Command qualifier
- Blank separator
- 9 Number of timing lines in the front side (0 – 100)
- Blank separator
- 9 Number of timing lines in the back side (0 – 100)
- Blank separator
- 9 Number of columns
 - 12-40 for 40 column read-head-program
 - 12-48 for 48 column read-head-program
 - 12-20 for A15 and A33 reader
- Blank separator
- A Auto reverse (based on number of timing lines) (either N or F)
 - A,C,E,G = 1. Mark is LEFT (opposite timing line)
 - N,D,F,H = 1. Mark is RIGHT (near timing lines)
 - C,D = reverse Line from Head 1
 - E,F = reverse Line from Head 2
 - G,H = reverse Line from Head 1 and 2
- Blank separator
- 9 Minimal number of Barcodes in the front side (blank, or 0 – 10)
 - Blank mean no barcode scanning, and is faster !!!

d. Threshold command. To the threshold level to apply to subsequent filed definitions.

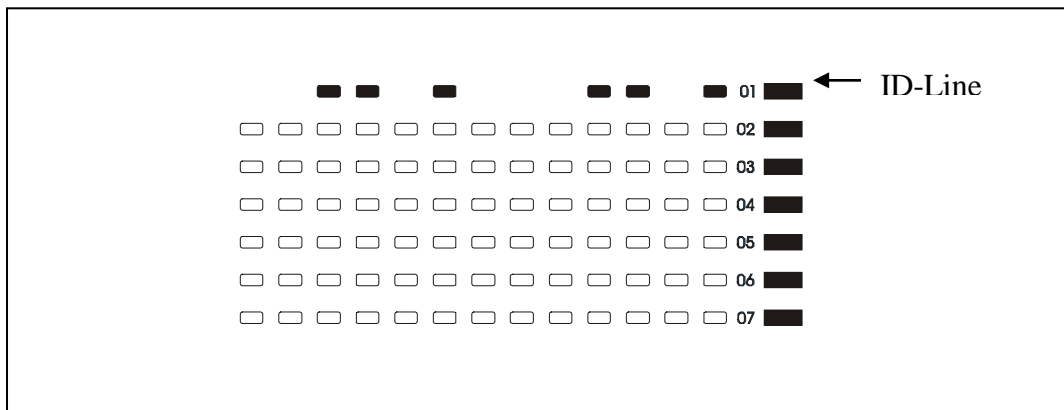
Not include

- e. Identification command. To specify a pattern line that a form should have, apart from the required number of clocks, to be considered as valid. This command is the first after "S"-command !

The pattern line (or column) consist of printed marks, which allow the reader to identify the form. An identification command causes the reader to check for the specified identification marks and reject the form if they do not match the required pattern. No data is generated by this identification marks.

- I Command qualifier
- Blank separator
- 9 Form side (1 or 2)
- Blank separator
- A Orientation (L for line, or C for column)
- Blank separator
- 9 Number of line or column (1 – 100)
- Blank separator
- A* _Pattern string (one to 99 characters)
 - (Minus) : Check for blank
 - X : Check for mark
 - . (Point) : Don't check

Example:



Command:

I 1 L 1 -XX---X-XX-....

The reader sends:

nothing

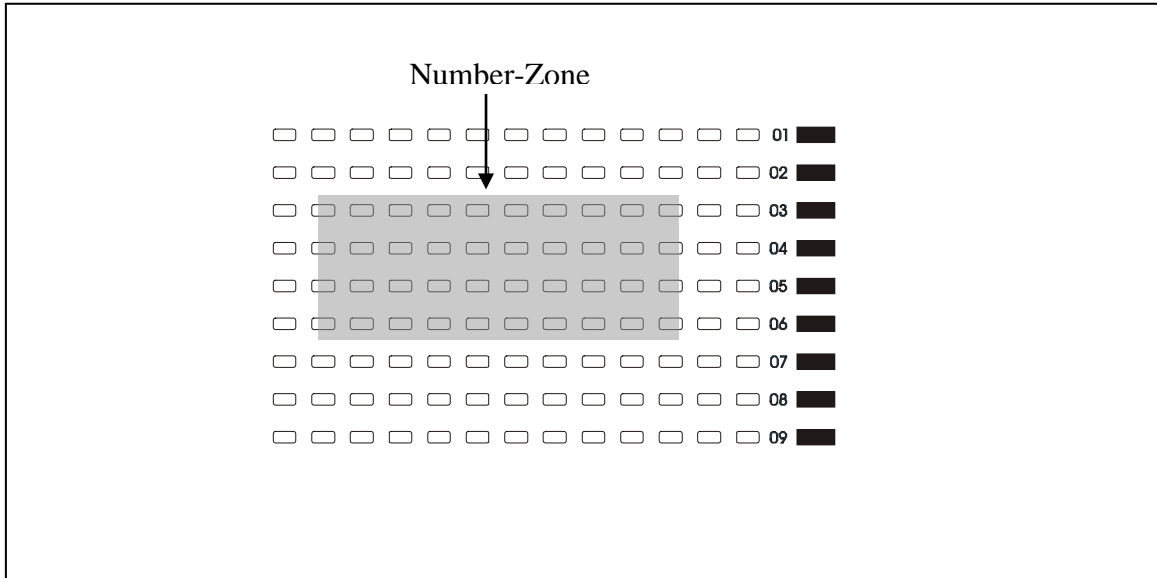
f. Multiple choice command. To specify a rectangular zone for a field.

Multiple choices may be used for any form data zone that requires one choice (or more) to be selected from among many possible answers. Multiple Choice has a rectangular geometry with one corner of the rectangle specified by the timing line and column for the first element, first choice, and the second corner specified by timing line and column for the last element, last choice.

M	Command qualifier Blank separator
A	Multiple, single or multilevel (either Y, N or M, or X, P or Q) Y = multiple Marks (more marks allowed) N = single Marks (only one mark allowed) M = single Marks with multilevel (the darkest mark will be read) X = Y but minimal 1 mark P = N but minimal 1 mark Q = M but minimal 1 mark Blank separator
9	Number of character per choice (1 – 5) Blank separator
9	Form side (either 1 or 2) Blank separator
9	First timing line (1 – 100) Blank separator
9	First column (1 – 40) Blank separator
9	Last timing line (1 – 100) Blank separator
9	Last column (1 – 40) Blank separator
A	Orientation (L or C) Blank separator
9	Number of elements (1 – 100) Blank separator
9	Number of choices (1 – 100) Blank separator
A*	Choice string (N ⁰ choices x N ⁰ of characters per choice)

Example:

Assume that a social security number is placed on the form, using nine columns, for every digit one line. In each line you can set one mark in the column, which represents the corresponding figure. The "0" choice for the first digit is at column 12, line 3 and the "7" choice for the fourth digit is at column 6, timing line 6. In this example we use single mark because only one mark in each timing line is allowed (line orientated). If there are more marks or no marks the reader will send "????". The following figure shows the zone for this example.



The command for the preceding example follows:

M P 1 1 3 12 6 3 L 4 10 0123456789

The command can be read literally as a Multiple Choice zone where multiple marks are not allowed. The first element, first choice is on the front side at timing line 3, column 12. The whole zone occupies a rectangular area down to timing line 6, column 3. A total of 4 elements with 10 choices per element exist. The choices are "0" to "9".

If marked 3/11 – 4/5 – 5/3 – 6/10
Reader sends:

1792

g. Related item command. To specify a sequence of marks for a field.

Related items are choices randomly made on either side at any line and column position without restriction. Side of form, timing line, column and choice response must be specified individually for every possible choice. Either single or multiple responses can be selected.

- T Command qualifier
Blank separator
 - A Multiple, single or multilevel (either Y , N or M, or X,P or Q)
Y = multiple Marks
N = single Marks
M = single Marks with multilevel
X = Y but minimal 1 mark
P = N but minimal 1 mark
Q = M but minimal 1 mark
Blank separator
 - 9 Number of characters per choice (1 – 5)
Blank separator
- A sequence of the following fields:
- 9 Form side (1 or 2)
Blank separator
 - 9 Timing line (1 – 100)
Blank separator
 - 9 Column (1 – 40)
Blank separator
 - A* Choice string (No of characters per choice)
Blank separator

Example:

01	
02	
03	
04	
05	
06	
07	
08	
09	
10	
11	
12	
13	
14	

Command:

T Y 1 1 3 6 A 1 6 2 B 1 7 5 C

If marked 3/6 – 7/5

Reader sends :

A_C

h. Frame zone. To specify a rectangular image frame or zone to transmit encoded.

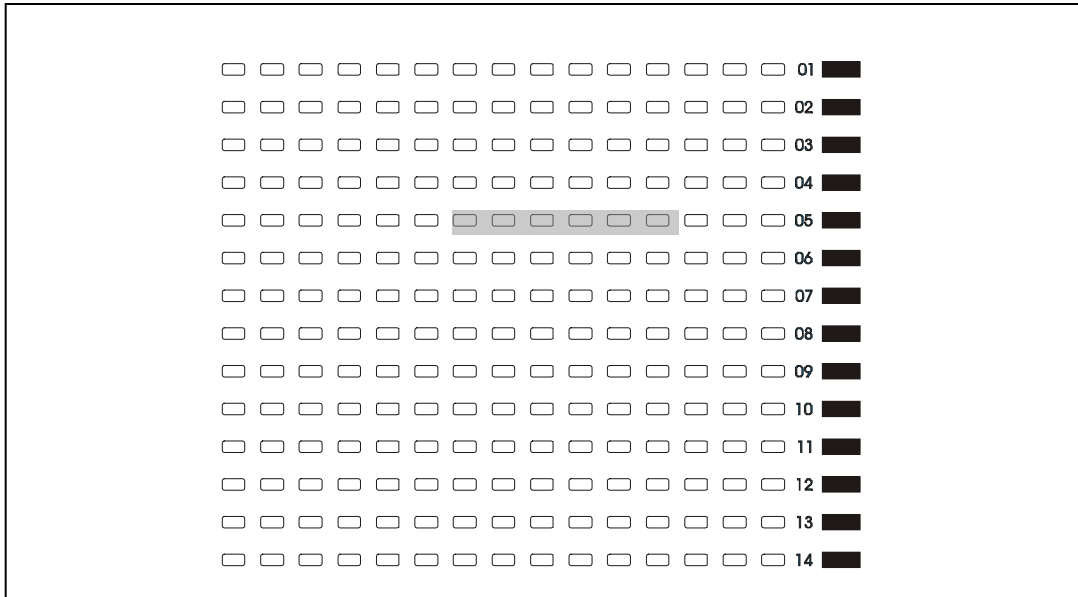
F	Command qualifier
	Blank separator
9	Form side (either 1 or 2)
	Blank separator
9	First timing line (1 – 100)
	Blank separator
9	First column (1 – 40)
	Blank separator
9	Last timing line (1 – 100)
	Blank separator
9	Last column (1 – 40)
	Blank separator
A	Orientation (L or C)
	Blank separator
9	Number of elements (1 – 100)
	Blank separator
9	Number of choices (1 – 100)

i. Summation command. To specify a rectangular zone for a binary field.

A summation zone defines a rectangular group of elements that produces one binary coded integer per element.

- Y Command qualifier
- Blank separator
- 9 Number of digits in the response string (1 – 10)
- Blank separator
- 9 Minimum numeric value (0 – 4294967290)
- Blank separator
- 9 Maximum numeric value (0 – 4294967290)
- Blank separator
- 9 Form side (either 1 or 2)
- Blank separator
- 9 First timing line (1 – 100)
- Blank separator
- 9 First column (1 – 40)
- Blank separator
- 9 Last timing line (1 – 100)
- Blank separator
- 9 Last column (1 – 40)
- Blank separator
- A Orientation (either L or C)
- Blank separator
- 9 Number of elements (1 – 100)
- Blank separator
- 9 Number of choices (1 – 100)
- Blank separator
- 9 Choice values separated with blanks (0 – 4294967290)

Example



Command:

Y 2 0 25 1 5 4 5 9 L 1 6 1 2 3 5 10 20

If marked 5/4 – 5/6 – 5/8

Reader send:

14

- j. Random Summation command. To specify a sequence of marks for a binary field.

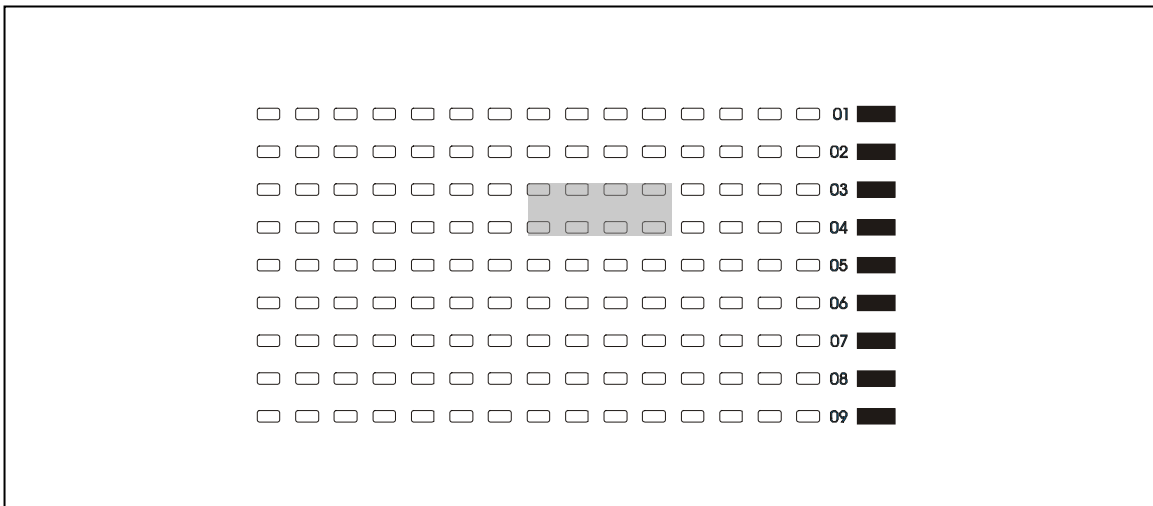
A random summation zone produces a single binary coded integer response from a group of choices that are located randomly in different areas of a form.

Z Command qualifier
 Blank separator
 9 Number of digits in the response string (1 – 10)
 Blank separator
 9 Minimum numeric value of sum (0 – 4294967290)
 Blank separator
 9 Maximum numeric value of sum (0 – 4294967290)
 Blank separator

A sequence of the following fields:

9 Form side (either 1 or 2)
 Blank separator
 9 Timing line (1 – 100)
 Blank separator
 9 Column (1 – 40)

Example:



Command:

Z 3 1 300 1 3 5 1 3 6 1 3 7 1 3 8 1 4 5 1 4 6 1 4 7 1 4 8

If marked: 3/5 – 3/7 – 4/6 – 4/8

Reader sends: 165

k. Insertion command. To specify a constant character string put into the data record.

X	Command qualifier Blank separator
9	Output string length (1 – 100) Blank separator
A*	String of ISO characters

l. Serial number command. To specify an incrementing field or counter

The serial number command inserts up to 10 digits of an internally maintained serial number into the output data record.

N	Command qualifier Blank separator
9	Number of digits in the response string (1 – 10)

m. Barcode command. To specify a barcode field

B	Command qualifier Blank separator
9	Choice of barcode number (1 – 10) Blank separator
9	Output length (1 – 30) Blank separator
9	Reserved for future Blank separator
9	Fill char for an error barcode (decimal notation)

Example
B 1 15 0 42

On the sheet is a 13-digit EAN code

If correct reading

The reader transmits first 2 blank characters and then contents of the BAR-code

If not correct reading

The reader transmits 15 star's

n. Form end command, to close the download of a form definition:

E	Command qualifier
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OMR error code like:

M00	No more documents on input stacker
M20	Output stacker full
M70	Double sheet detection
M08	Paper jam after Read command

Definition error codes

M10	No form definition done. No parameters loaded.
M11	Unknown document (wrong number of clocks, or no clocks)
M12	Unknown document (wrong number of barcodes)
M13	Unknown document (wrong or missing identification zone)

Example: Defining a form



```

C
V 1 10
S 16 0 48 N
I 1 L 01 X-.....-X
I 1 L 16 X-.....-X
M N 1 1 02 02 05 05 L 4 4 ABCD
M N 1 1 06 02 10 05 L 5 4 ABCD
Y 2 1 15 1 06 10 06 13 L 1 4 1 2 4 8
E
    
```

If marked 2/4 - 5/3 - 6/11 - 6/12 - 7/2 - 9/4 - 10/3
Reader send : C__B__A__CB06

Example: Download a form

PC Reader

```
`I' →  
  ← 06H, 0DH  
'C' 0DH →  
  ← 06H, 0DH  
'S 15 0 40 N 1' 0DH →  
  ← 06H, 0DH  
'I 1 L 01 X-.....-X' 0DH →  
  ← 06H, 0DH  
'M N 1 1 06 02 10 05 L 5 4 ABCD' 0DH →  
  ← 06H, 0DH  
'Y Y 2 1 15 1 06 10 06 13 L 1 4 1 2 4 8' 0DH →  
  ← 06H, 0DH  
'E' 0DH →  
  ← 06H, 0DH
```