

## OZ Versions

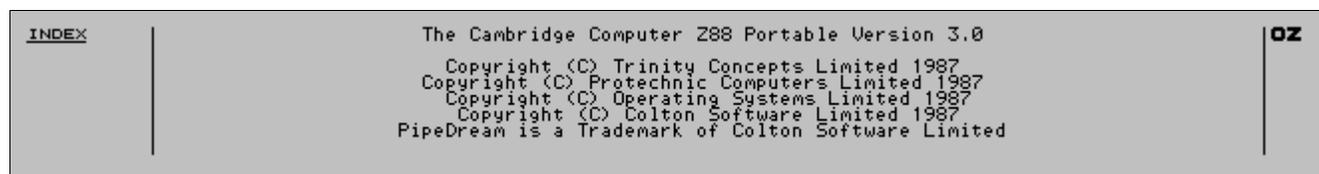
Version	Keyboard	Date At Hard Reset	CLI ESC	:RAM.- Bug	PrinterEd Bug
1.2	British				
1.41	British				
2.0	British				
2.2 / 3.0	<a href="#">British</a> <a href="#">Icelandic</a>	Tuesday 1st September 1987	[[	Yes	Yes
2.5	<a href="#">Swedish</a>	Sunday 24th January 1988	,	Yes	Yes
2.6	<a href="#">Danish</a>	Friday 29th January 1988	,	Yes	
3.12	<a href="#">French</a>	Monday 11th April 1988	[[ and  ,	No	Yes
3.13	<a href="#">Swiss</a> <a href="#">Icelandic</a>	Monday 18th April 1988	[[	No	No
3.17 (Turkey)	<a href="#">Turkish</a>	Monday 27th June 1988	[[	No	
3.18 (Germany)	<a href="#">German</a>	Wednesday 6th July 1988	[[ and  ,	No	Yes
3.19 (Spain)	<a href="#">Spanish</a>	Tuesday 19th July 1988	[[ and  ,	No	
3.21 (Denmark)	<a href="#">Danish</a>	Tirsdag 26 Juli 1988	[[ and  ,	No	
3.23 (Italy)	<a href="#">Italian</a>	Thursday 20th October 1988	[[ and  ;	No	
3.26 (France)	<a href="#">French</a>	Monday 28th August 1989	[[ and  ,	No	
4.001 (UK)	British	Sunday 15th March 1992			
4.005 (UK)	British				
4.0 (UK)	<a href="#">British</a>	Monday 3rd August 1992	[[	No	No
<a href="#">4.01 (FI)</a>	<a href="#">Finnish/Swedish</a>	Wednesday 6th November 2002	,	No	No

### [Z88 Fonts](#) New 16 August

## Notes

### Version

Press the HELP key from any Z88 application. Press the left arrow key a couple of times until the text 'The Cambridge Computer Z88 Portable Version ' followed by a number and optionally a country name inside parantesic is shown. At least version 2.2, 2.5, 2.6, 3.0, 3.12 and 3.13 are not followed by a country name.



The first three versions [1.2](#), [1.41](#) and [2.0](#) were reported by Roy Woodward, editor of the 'Z88 Users'

Club' newsletter '[Z88 EPROM](#)'. He got his first Z88 on the 30th June 1987. Version 1.2 didn't have the soft reset option, only hard reset. A 'save to EPROM' command could sometimes reset the Z88. Version 2.0 had memory problems. At five instances of PipeDream there was a 'No Room' message regardless of available RAM.

Version 2.2 and 3.0 are identical except the version number and that 2.2 was on EPROM and 3.0 on ROM.

Version 2.6 seems to have been marketed both as Danish and Norwegian. Anyone know more?

The Icelandic versions based on 3.0 and 3.13 were made by Adam David <adam@veda.is> and were never officially sanctioned by Cambridge Computer.

The Finnish/Swedish [4.01](#) was made by Jorma Oksanen.

## Keyboard

French, German, Icelandic, Italian, Spanish, Swedish and Turkish keyboard maps can be viewed at Rakewell | Z88 | Hardware | [Foreign Z88 Keyboards](#).

## Date At Hard Reset

This is the date displayed when going to the Clock [T] popdown after a hard reset. Note the Danish version is unique in having the date in Danish format instead of British.

## Index Help

Version 2.2/3.0 have an Index help page with rules for card changing.

```

INDEX                               Index
All insertion and removal of cards must be done from
the INDEX. Do not remove any RAM card, or a ROM card
which is in use. A continuous tone asks for a ROM
card to be reinserted into its original slot.
A FAIL message requires the machine to be reset.

FOR MORE INFORMATION:
other programs                               OZ
↑↓
MENU topic entries  HELP browse
INDEX the manager   ESC resume

```

## PipeDream Help

Version 2.2 to 2.6 have ten PipeDream help pages describing Trig. Functions, Log. Functions, List Functions, Slot Functions, Integer & Date Functions, Conditionals, Operators, Logical Operators, Relational Operators and Wildcards.

```

INDEX                               PipeDream `Trig. Functions`
COS(radians), SIN(radians), TAN(radians)
return the cosine, sine or tangent of the argument.
ACS(n), ASN(n), ATN(n)
return the arc cosine, sine or tangent of "n"
(in radians).
RAD(degrees) returns "degrees" converted into radians.
DEG(radians) returns "radians" converted into degrees.

FOR MORE INFORMATION:
other INFO entries                           OZ
↑↓
the INFO topic                               ⇄
MENU topic entries  HELP browse
INDEX the manager   ESC resume

```

```

INDEX                               PipeDream `Log. Functions`
LN(n) returns the natural logarithm, (log e) of "n".
LOG(n) returns the logarithm to base 10 of "n".
EXP(n) returns the constant e, to the power of "n".

FOR MORE INFORMATION:
other INFO entries                           OZ
↑↓
the INFO topic                               ⇄
MENU topic entries  HELP browse
INDEX the manager   ESC resume

```

```

INDEX                               PipeDream `List Functions`
CHOOSE(list) returns an element from "list", using the
first element as an index into the remaining elements.
eg. CHOOSE(3, 4, 5, 6) is 6.
COUNT(list) is the number of non-blank slots in "list".
MAX(list) is item with max. value of slots in "list".
MIN(list) is item with min. value of slots in "list".
SUM(list) is the the sum of the items in "list".

FOR MORE INFORMATION:
other INFO entries                           OZ
↑↓
the INFO topic                               ⇄
MENU topic entries  HELP browse
INDEX the manager   ESC resume

```

<u>INDEX</u>	<p>PipeDream \Slot Functions'</p> <p>COL returns the column number in which it is evaluated.  INDEX(column,row) returns the value of the slot  referenced by "column" and "row".  LOOKUP(key,range1,range2) returns the value in "range2"  corresponding to the position the key occurs in "range1".  Wildcards may be used in "key". If no match = "Lookup".  ROW returns the row number in which it is evaluated.</p>	<p>FOR MORE INFORMATION:</p> <p>other INFO entries   ↑  ↓  the INFO topic       ↔</p> <p><b>MENU</b> topic entries   <b>HELP</b> browse  <b>INDEX</b> the manager   <b>ESC</b> resume</p>	<b>OZ</b>
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<u>INDEX</u>	<p>PipeDream \Integer &amp; Date Functions'</p> <p>ABS(n) returns the absolute value of "n".  DAY(date) returns the day number in "date".  MONTH(date) returns the month number in "date".  PI returns the value 3.141592653.  SGN(n) returns -1, 0, 1 depending on the sign of "n".  SQR(n) returns the square root of "n".  YEAR(date) returns the year number of "date".</p>	<p>FOR MORE INFORMATION:</p> <p>other INFO entries   ↑  ↓  the INFO topic       ↔</p> <p><b>MENU</b> topic entries   <b>HELP</b> browse  <b>INDEX</b> the manager   <b>ESC</b> resume</p>	<b>OZ</b>
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<u>INDEX</u>	<p>PipeDream \Conditionals'</p> <p>IF(boolean,then,else).</p> <p>If the value of the "boolean" is TRUE (non-zero), IF  returns "then", otherwise IF returns "else".  eg. IF(5&gt;1, "more", "less") is "more".</p>	<p>FOR MORE INFORMATION:</p> <p>other INFO entries   ↑  ↓  the INFO topic       ↔</p> <p><b>MENU</b> topic entries   <b>HELP</b> browse  <b>INDEX</b> the manager   <b>ESC</b> resume</p>	<b>OZ</b>
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<u>INDEX</u>	<p>PipeDream \Operators'</p> <p>Add: +  Subtract: -  Multiply: *  Divide: /  Raise to power: ^</p>	<p>FOR MORE INFORMATION:</p> <p>other INFO entries   ↑  ↓  the INFO topic       ↔</p> <p><b>MENU</b> topic entries   <b>HELP</b> browse  <b>INDEX</b> the manager   <b>ESC</b> resume</p>	<b>OZ</b>
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<u>INDEX</u>	<p>PipeDream \Logical Operators'</p> <p>Logical AND: &amp;  Logical OR:    Logical NOT: !</p>	<p>FOR MORE INFORMATION:</p> <p>other INFO entries   ↑  ↓  the INFO topic       ↔</p> <p><b>MENU</b> topic entries   <b>HELP</b> browse  <b>INDEX</b> the manager   <b>ESC</b> resume</p>	<b>OZ</b>
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<u>INDEX</u>	<p>PipeDream \Relational Operators'</p> <p>Less than: &lt;  Less than or equal to: &lt;=  Not equal to: &lt;&gt;  Equal to: =  Greater than: &gt;  Greater than or equal to: &gt;=</p>	<p>FOR MORE INFORMATION:</p> <p>other INFO entries   ↑  ↓  the INFO topic       ↔</p> <p><b>MENU</b> topic entries   <b>HELP</b> browse  <b>INDEX</b> the manager   <b>ESC</b> resume</p>	<b>OZ</b>
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<u>INDEX</u>	<p>PipeDream \Wildcards'</p> <p>Any single character: ^?  Any number of characters: ^#</p>	<p>FOR MORE INFORMATION:</p> <p>other INFO entries   ↑  ↓  the INFO topic       ↔</p> <p><b>MENU</b> topic entries   <b>HELP</b> browse  <b>INDEX</b> the manager   <b>ESC</b> resume</p>	<b>OZ</b>
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## <>ISO

Version 3.12 and later have a third page in PrinterEd, reachable with the command <>ISO, with 28 additional character translations.

<u>PRINTED</u>	<p><b>PRINTER CODE</b> Character 163  <b>EDITOR</b> Changes to 27,82,3,  Character  Changes to  <b>PRINTER</b> Character  Epson Changes to  Character  <b>ISO Translations</b> Changes to</p>	<p>FOR MORE INFORMATION:</p> <p>other INFO entries   ↑  ↓  the INFO topic       ↔</p> <p><b>MENU</b> topic entries   <b>HELP</b> browse  <b>INDEX</b> the manager   <b>ESC</b> resume</p>	<b>OZ</b>
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## CLI ESC

In the British versions, the characters [| can be used in CLI files to symbolise pressing the Escape key. Actually it simulates holding the diamond <> key and then pressing the [ key which returns the

ESC key code. If you have a British version, you can easily test it by going to the BASIC command prompt. Hold the diamond key and press the [ key. The response is the text 'Escape' just as if the ESC key was pressed.

If you have a non-British version where |[ doesn't return ESC it's easy to find out which keys do. Just hold the diamond key in BASIC and press other keys until you get the 'Escape' response. Probably it is diamond and a non-letter key.

In the Swedish version 2.5 and Danish 2.6, ESC is returned by holding the diamond key and pressing the ',' (comma) key.

There is actually not a one to one relation between which key combination returns Escape from the keyboard and which characters produce escape in a CLI file. In Swiss OZ 3.13 the keys <> and , produce escape from the keyboard but |, does not produce escape in a CLI file. |[ does. In Turkish OZ 3.17 the keys <> and Ç produce escape from the keyboard but |Ç does not produce escape in a CLI file. |[ does. In Italian OZ 3.23 the keys <> and ; produce escape from the keyboard and both |; and |[ produces escape in a CLI file.

The result of this is that you can actually not develop a cli routine relying on producing escape that works on all OZ versions.

The following examples marks the last suspended application in Index ready for <>KILL or other action regardless of where the selection bar is initially.

```
#I|CARD|[~R
#I|CARD|,~R
#I|CARD|;~R
#I|CARD|[,~R
```

Save one of the above lines at the time to a file in PipeDream as plain text and execute it from the Filer to see which ones work with your OZ version.

### **:RAM.- Bug**

- From The BBC BASIC(Z80) Reference Manual for the Z88: "There is a bug in versions of the filer up to and including version 3 that will cause the Z88 to crash if you use the device :RAM.- and then perform a soft reset whilst any files are still present in the device."

- From Z88 Developers' Notes v.093: "Due to a bug in the current operating system (version 2.2/3.0) if any files are stored in the device when a Soft Reset occurs, the system becomes badly confused, and is it very likely that a crash will follow sometime later."

See [Z88 User Manual, Third Edition, Additions and Corrections](#) and [Z88 Internal ROM Modifications](#) for several notes on avoiding :RAM.- files.

### **PrinterEd Bug**

Goto PrinterEd [E. Enter the command <>FNEW. When the cursor returns enter the command <>FS. Enter a suitable filename to save. Load the file in PipeDream. If row 15 to 18 looks like this:

```
0 Y
1 Y
3 Y
4 Y
```

then you have the small 'Ext. sequence Off at CR' bug. The entry '2 Y' for Ext. sequence Off at CR is missing.

The serious 'Ext. sequence Off at CR' bug doesn't come into play until you update <>FU a printer driver without this option specified. Then it seems to upset the system and often cause an OZ Fail.

The cure is simple. Move the cursor to the option for Ext. sequence Off at CR and press Y even if it already shows Y. Then a save will include the entry '2 Y'. I don't know how or in which OZ versions it is fixed.

In my experience with v2.5 the :RAM.- bug and the PrinterEd Ext. sequence bug are responsible for the vast majority of OZ crashes.

### Application Static Structures

From version 2.2 these major changes were made.

#### 2.5

Index ApplHelpOffset

#### 3.12

Index, Diary, PipeDream, Filer, PrinterEd, Panel and Terminal TopicsOffset, CommandsOffset and ApplHelpOffset.

No PipeDream Info topic.

BASIC SafeWorkspace

Filer ApplicationCodeEntryPoint

PrinterEd Desired binding of Segment 0

Terminal ApplicationCodeEntryPoint

Terminal Desired binding of Segment 3

#### 3.17

Alarm, Filer ApplicationDorBank, ApplicationDorOffset

Alarm TopicsOffset, CommandsOffset, ApplHelpOffset

Alarm TopicsBank, CommandsBank, ApplHelpBank

I.e. from v3.17 the main application blocks didn't move around.

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## Wanted

Help with missing or incorrect details in the table above. Anyone have an Icelandic version? Is the manual translated to other languages than German and Finnish? Any other differences. Anyone know a sure way of replicating the :RAM.- bug.

Many Thanks to Jürgen v. Heymann, Salvador Merino, David Alcorn and Gunther Strube for details on the German, Spanish, French 3.12 and Danish versions.

Email: [dennisgr@algonet.se](mailto:dennisgr@algonet.se)

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Back to [Cambridge Computer Z88](#)