

CHIP SPECIAL

Pocket Calculators



**DIY Expansions, Knowledge,
Programming, Software.**

**Contains More Than 30
Interesting Assembly
Instructions**

Oliver Knill – Translation by MvC, 2020

Switching Interface For TI-59, TI-58, TI-57

Chip has already published many good instructions for switching interfaces. Why build another one? I was looking for a circuit which allows to control multiple channels. The calculator display is especially well suited for this task.

A seven segment display has a simple construction. If, for example, line 1 and line 8 are asserted then the upper segment is turned on. On the other hand, if the upper segment is lit a voltage can be picked up between line 1 and line 8.

This voltage is then amplified to trigger a relay. The display can show the numbers from 1 to 9. Let us just consider the upper and the middle horizontal segment. The digits 1, 4, 7 and 8 suffice to control two channels independently. In theory, 20 channels can be controlled but not without problems:

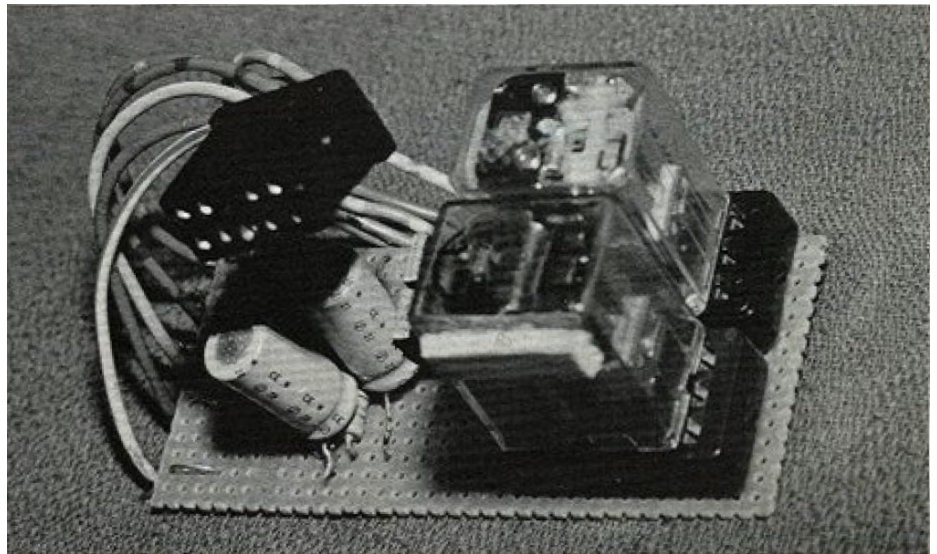
- Cost and effort for 20 channels are quite high.
- 22 wires need to be routed out of the calculator.
- In the extreme case, 20 relays need to be switched.

Therefore I decided to stick to two channels.

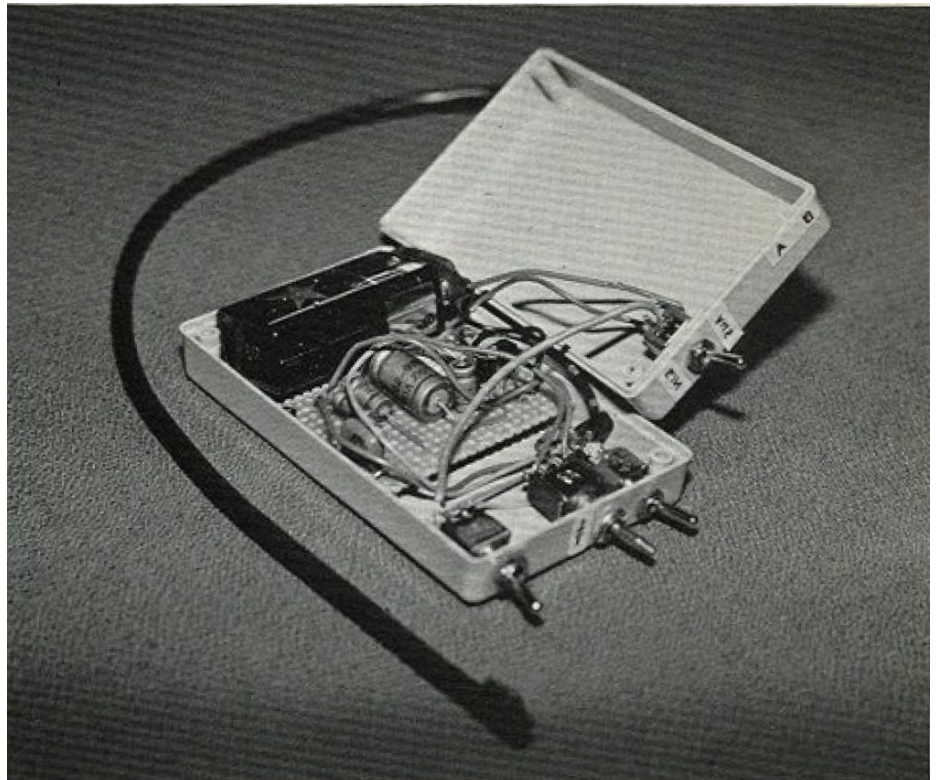
The Circuit

The schematics are pretty simple and can be assembled by computer

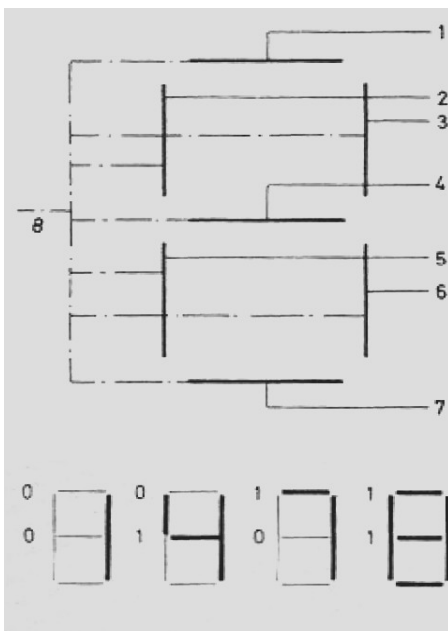
enthusiasts without much experience in electronics.



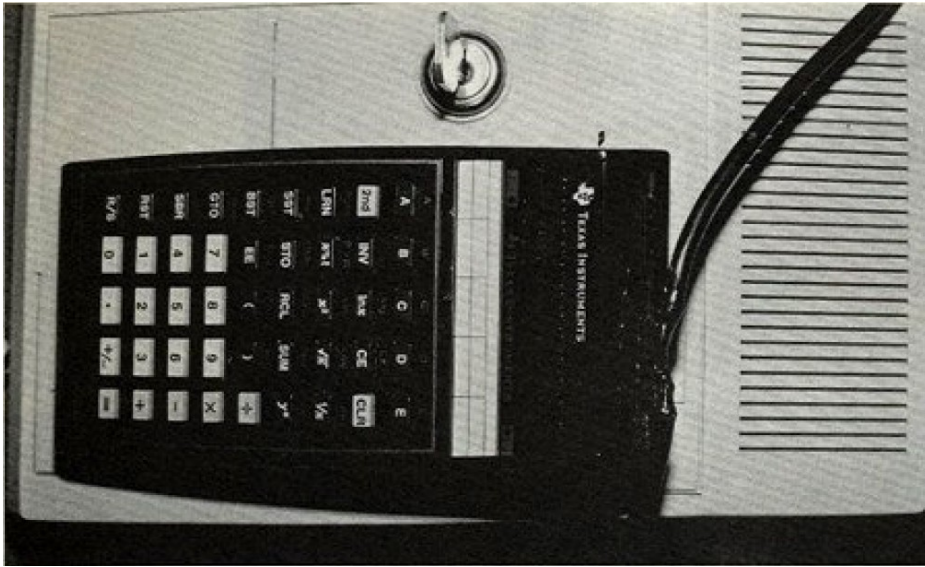
Prototype assembly of the switching interface with two relays



Openend case with battery for the switching interface



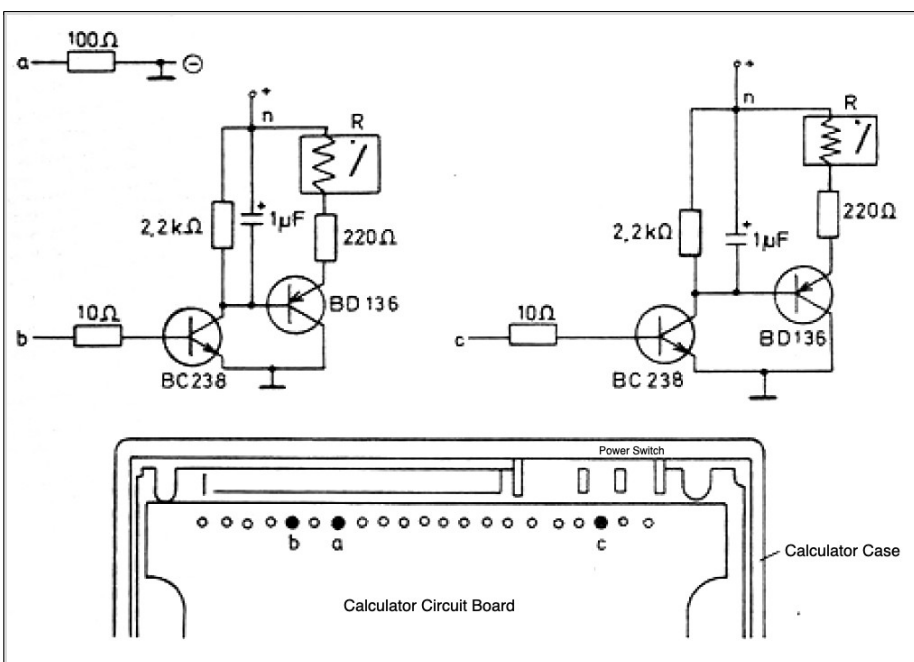
Segment layout and control



The pocket calculator is mounted on its printer cradle. The cable leaving the calculator is the connection to the switching interface.



View of the full installation with the pocket calculator, the printer cradle and the switching interface with all connections



The circuit schematics show the relatively simple construction of the switching interface. The calculator circuit board shows the connections to the switching interface.


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000 76 LBL          035 00 0          070 42 STD          105 54 54
001 11 R           036 00 0          071 00 00          106 69 DP
002 93 .           037 95 =          072 25 CLR          107 03 03
003 05 5           038 91 R/S        073 03 3           108 69 DP
004 44 SUM         039 43 RCL         074 66 PAU          109 05 05
005 00 00         040 00 00         075 99 PRT          110 61 GTD
006 61 GTD        041 67 EQ          076 25 CLR          111 34 FX
007 00 00         042 23 LNX         077 02 2           112 76 LBL
008 16 16         043 91 R/S        078 66 PAU          113 35 1/X
009 76 LBL        044 76 LBL         079 99 PRT          114 43 RCL
010 12 B          045 13 C           080 25 CLR          115 53 53
011 93 .          046 69 DP          081 01 1           116 69 DP
012 05 5          047 00 00         082 66 PAU          117 01 01
013 22 INV        048 43 RCL         083 99 PRT          118 43 RCL
014 44 SUM        049 59 59         084 69 DP           119 52 52
015 00 00        050 69 DP          085 00 00          120 69 DP
016 43 RCL        051 01 01         086 43 RCL          121 02 02
017 00 00        052 43 RCL         087 50 50          122 43 RCL
018 44 SUM        053 58 58         088 69 DP           123 51 51
019 01 01        054 69 DP          089 03 03          124 69 DP
020 43 RCL        055 02 02         090 69 DP           125 03 03
021 01 01        056 43 RCL         091 05 05          126 69 DP
022 69 DP         057 57 57         092 25 CLR          127 05 05
023 07 07        058 69 DP          093 91 R/S         128 61 GTD
024 25 CLR        059 03 03         094 76 LBL          129 34 FX
025 43 RCL        060 69 DP          095 23 LNX
026 01 01        061 05 05         096 43 RCL          2232007300.      50
027 22 INV        062 76 LBL         097 56 56          3122000000.      51
028 77 GE         063 34 FX          098 69 DP           2713311641.      52
029 35 1/X        064 02 2           099 01 01          1435411523.      53
030 67 EQ         065 00 0           100 43 RCL          1641312200.      54
031 00 00         066 42 STD         101 55 55          1700271331.      55
032 39 39         067 01 01         102 69 DP           4317241523.      56
033 65 X          068 01 +/-         103 02 02          1724310073.      57
034 01 1          069 94 +/-         104 43 RCL          2113151700.      58
                                     2431371735.      59

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Programm for a landing on Mars with the TI-59 pocket calculator