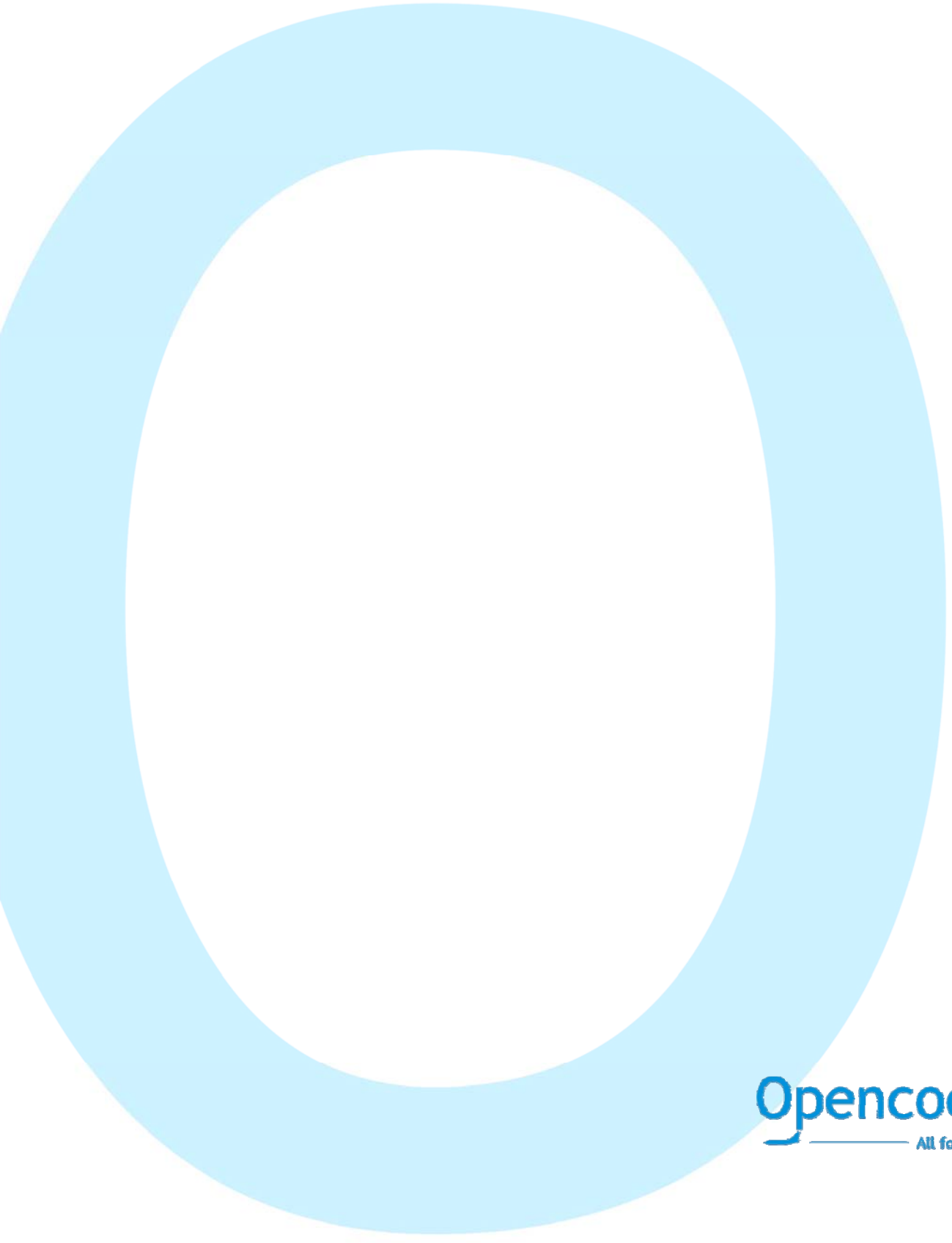
OPENCOCKPITS IOCards USBKeys

INSTALLATION AND USER'S MANUAL



Opencockpits

All for your cockpit

INTRODUCTION

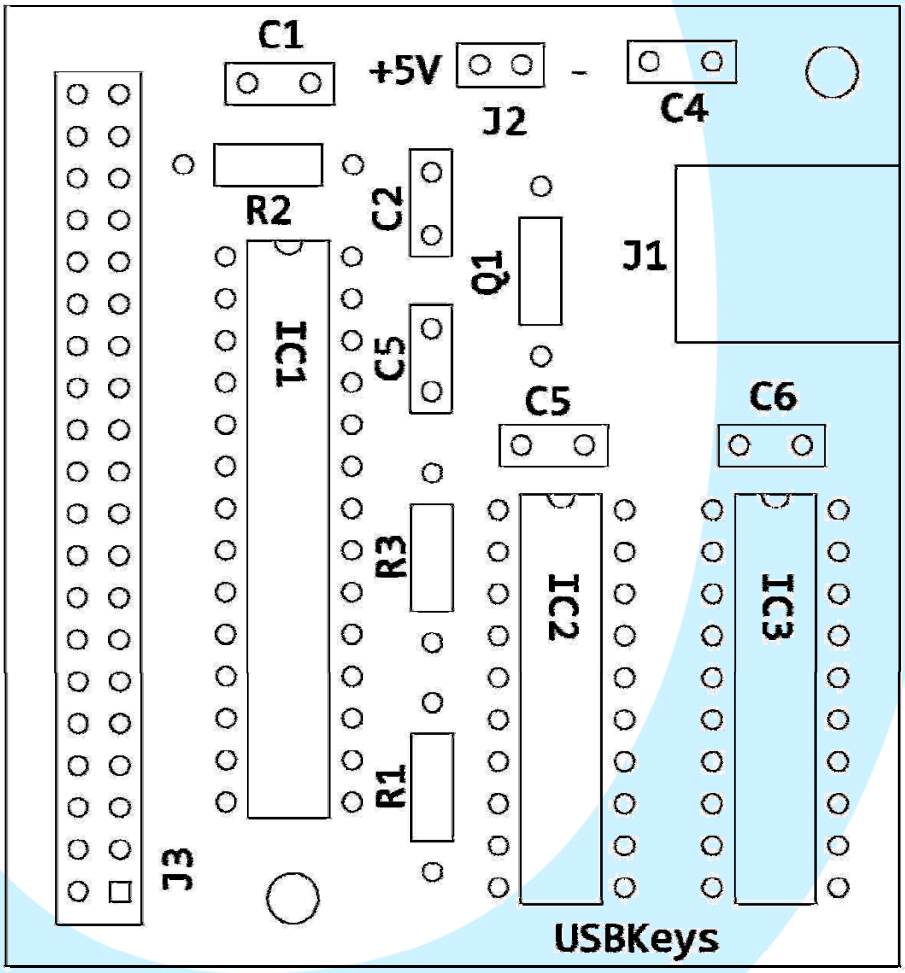
The USBKeys manages automatically matrix keyboards.

This card allows manage and control a keyboard via connecting pushbutton in a matrix of 11x8 lines, this is the way to obtain a total of 88 keys.

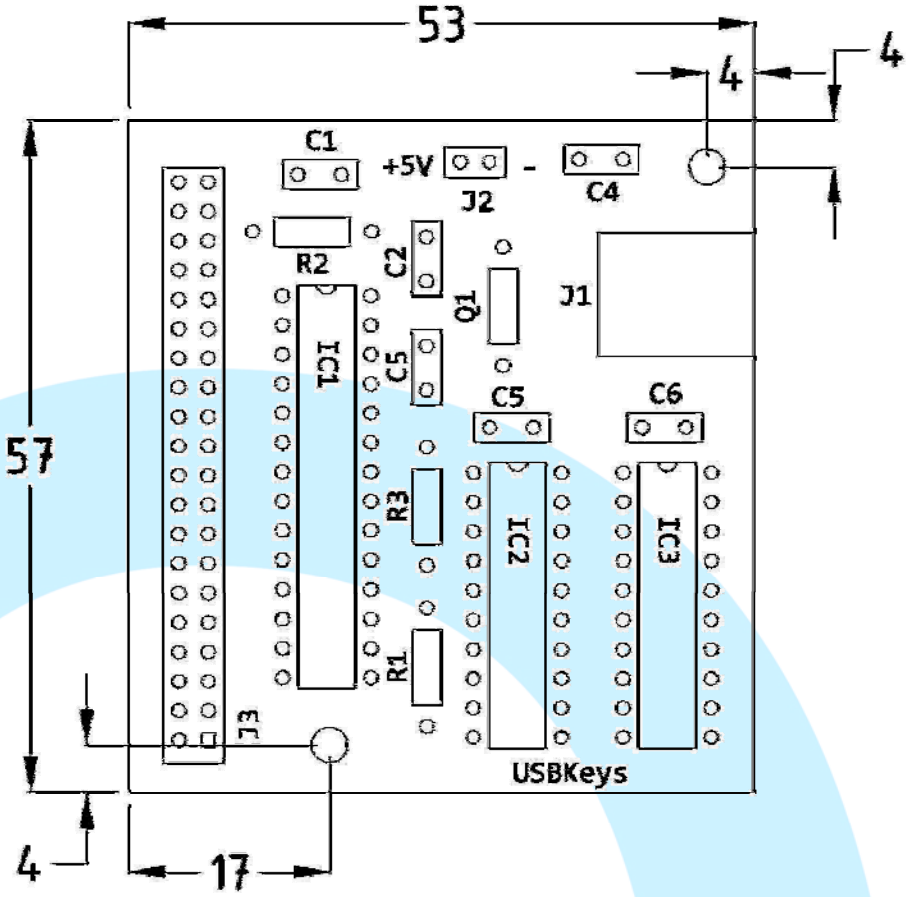
The card must be connected in a USBport, this allows to us to configure it in a very easy way, also it works trough IOCP protocol, with the SIOC language or also emulating a keyboard directly via software..

LIST OF COMPONENTS

- C1, C4, C5, C6 = CAPACITOR 0.1 mF
- C2, C3 = CAPACITOR 22Pf
- IC1 = MICROCHIP 16C745
- IC2, IC3 = INTEGRATED CIRCUIT 74HC541
- J1 = CONNECTOR USB
- J2 = POWER CONNECTOR 2 PINS
- J3 = FLAT CABLE CONNECTORS 40 PINS
- Q1 = QUARTZ CRISTAL 6MHZ
- R2, R3 = RESISTOR 10K
- R1 = RESISTOR 1K5



PRINCIPAL MEASURES



CONNECTORS DESCRIPTION:

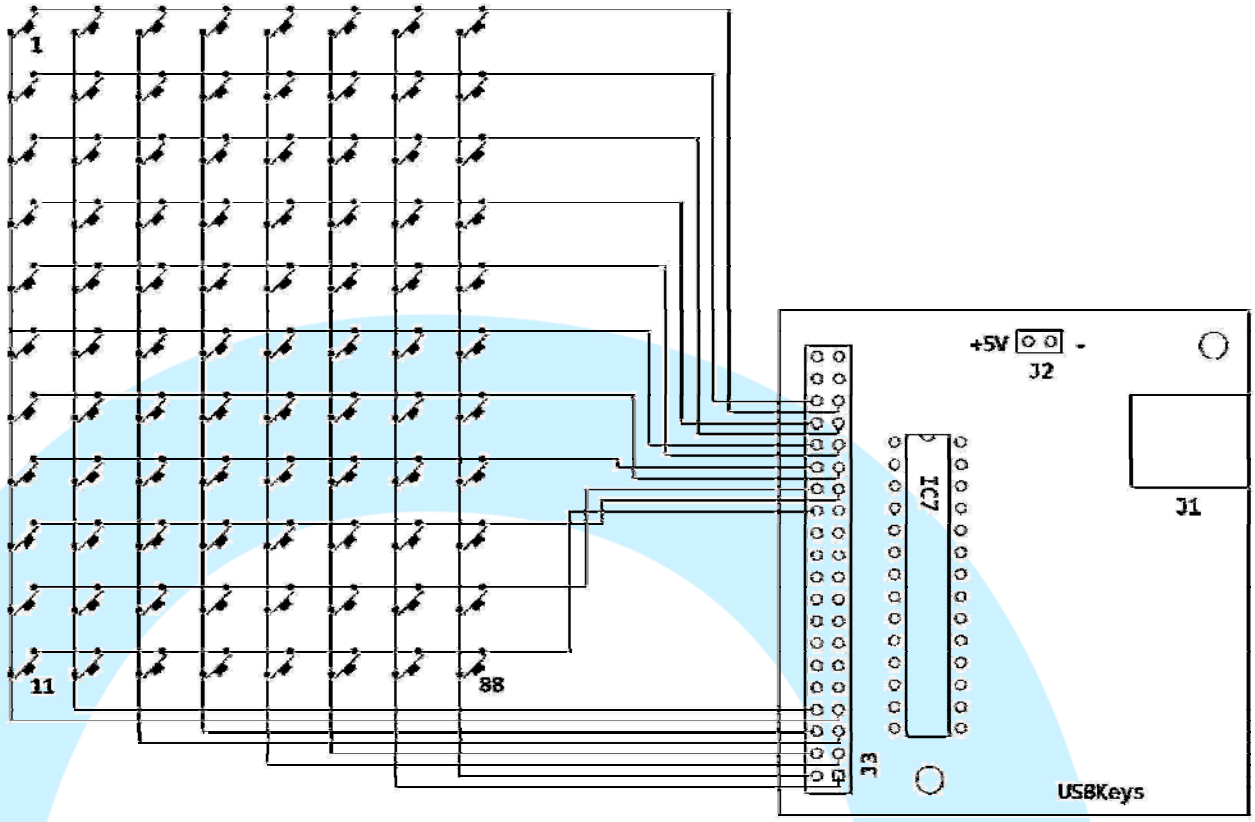
- J1 = Connector USB, allows to connect directly to the PC, at this moment the PC recognizes the card and install automatically the HID driver.
- J2 = Power connector, don't use.
- J3 = 40 pins connector to connect the matrix of keys (see below figure)

CONNECTING THE KEYS:

To connect all keys will be do it in matrix way, as the following table:

Connector J3	7 (pin1)	8 (pin2)	5 (pin3)	6 (pin4)	3 (pin5)	4 (pin6)	1 (pin7)	2 (pin8)
K (pin26)	87	88	85	86	83	84	81	82
I (pin27)	71	72	69	70	67	68	65	66
J (pin28)	79	80	77	78	75	76	73	74
G (pin29)	55	56	53	54	51	52	49	50
H (pin30)	63	64	61	62	59	60	57	58
E (pin31)	39	40	37	38	35	36	33	34
F (pin32)	47	48	45	46	43	44	41	42
C (pin33)	23	24	21	22	19	20	17	18
D (pin34)	31	32	29	30	27	28	25	26
A (pin35)	7	8	5	6	3	4	1	2
B (pin36)	15	16	13	14	11	12	9	10

To know better how to do that, see this diagram:



In the case that some pushbutton will pushed at same time, the card only manages the first 5 inputs, and they will be send in secuential way, losing from this 6th all following inputs.

WARNING: THE WIRING DON'T NEVER SHORTCIRCUIT LINES FROM THE SAME GROUP

SOFTWARE

If we want to connect and use the card as an keyboard emulator, we must use the application encoder_keys.exe

SIOC could be used directly to manage your keyboard, because from version 3.52b of SIOC, is already possible to link the card to emulate a keyboard, since this option is the most desirable, because the versatility is highest in SIOC.

ENCODER_KEYS: KEYBOARD EMULATOR

By encoder_keys.ini file we can configure the Access to the card.

File parameters:

MUSB=No

We set on "Yes" in the case we have more tan 1 USB cards connected to the same PC.

deviceUSB=2048

In this case we tells to the card to what device they must be connected.

To know the Device number, we can connect the card, and take note of the number that indicated by the own application. On each USB port the number varies.

Window = "a.txt – Bloc de notas"

We will put in this line the window where we want to send the keystrokes. This windows must be in the foreground, in any case can be minimized or running behind another window.

[Asignacion de teclas]

#1=A
#2=B
#3=C
…

In this way will send the codes of the keys to the keys sequences.

In the above example, it's clear that pressing the key number 1 (#1, connected in the matrix as pin7+pin35) should be sent to the indicated Window the letter "A", pressing the number 2 (#2, connected in the matrix as pin8+pin35) will send the letter "B", etc…

Combo keys like Ctrl, Alt, etc… will send as a default way, as we can see at the end of this document.

When we run the program, automatically minimizes to status bar (tray), with the icon that appears and the right button, we can maximize it right again, on the window appears also the last pressed key number and the number of Device.

SIOC USE

To use our USBKeys card with SIOC, we must "declare" this card in our sioc.ini file, for this purpose we add or edit the following line:

USBKeys=XX,YY

Where XX is the identifier number of this card and YY is the number of Device of own USB port where is connected.

As an example, if we connect a USBKeys on Device 34, then we must declare as follows:

USBKeys=1,34

(We use the number 1 for the identifier, but we can use whatever we want, the only condition is that we can't repeat this number in the same sioc.ini)

Key combinations and their codes are parametrized as if we use the encoder_keys.exe

A short example sending through SIOC, the keystrokes Ctrl+Alt+5 y Ctrl+Alt+6, using a rotative encoder

For this we must assign the key combination to codes 70 and 71 under the parameter [Asignacion de teclas] on sioc.ini:

#70=\3\15\2\4
#71=\3\16\2\4

As we can see (at the end of this document are the special assignations), in the code 70 we have applied the sequence Ctrl pressed (\3) Alt pressed (\1) key 5 (5) Alt released (\2) and Ctrl released (\4) and on the code71 the same but with the key 6 (6), this means that when we turns the encoder sideways the active window receives the sequence Ctrl+Alt+5 and to the opposite they receive Ctrl+Alt+6

```
// ********************************************************************************
// * Config_SIOC ver 3.6B2   -     By Manolo Vélez     -    www.opencockpits.com
// ********************************************************************************
// * FileName : teclas ctrl alt 5 y 6.txt
// * Date : 16/02/2009

Var 0001, Link IOCARD_ENCODER, Input 10, Aceleration 1, Type 2
{
  IF V0001 = 1
  {
    V0002 = 70
    V0002 = 0
  }
  ELSE
  {
    V0002 = 71
    V0002 = 0
  }
}

Var 0002, Link KEYS
```

We assign a 0 value to the keystroke after each code assignation, to avoid that being the encoder connected, the code will be sent repeatedly, in this way the 0 stops sending to the card.

If we run now SIOC, with the card properly configured and the wiring done, then we can see that when we turn the encoder they are sending those keystrokes to the window and this can serve us perfectly for the cases that don't know the appropriate offset to manage, and only have knowledge of keystrokes that works the add-on (in the case of PMDG, and others like WILCO, etc… is very important to use it).

SPECIAL KEYS DEFINITION

Write "\" +	A	B	C	D	E	F	G	H	I	J	K	L	M
Function	BKSP	TAB	ENTER	ESC	F1	F2	F3	F4	F5	F6	F7	F8	F9

Write "\" +	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Function	F10	F11	F12	HOME	END	UP	DOWN	LEFT	RIGHT	PG UP	PG DN	INS	DEL

Write "\" +	1	2	3	4	5	6	\
Function	SHIFT DN	SHIFT UP	CTRL DN	CTRL UP	ALT DN	ALT UP	\

NUM PAD DEFINITION

"/" +	/	0	1	2	3	4	5	6	7	8	9	A
Funcion	/	NUM 0	NUM 1	NUM 2	NUM 3	NUM 4	NUM 5	NUM 6	NUM 7	NUM 8	NUM 9	MULTIPLY

"/" +	/	0	1	2	3	4	5	6	7	8	9	A
Funcion	/	NUM 0	NUM 1	NUM 2	NUM 3	NUM 4	NUM 5	NUM 6	NUM 7	NUM 8	NUM 9	MULTIPLY

Note that the symbol that precedes the function of the number pad is not the same as for the especial functions, in the first case is the backslash "\" and the second is the normal slash "/".

If you precede any letter with the symbol "<", we will send it as a lower case letter, because sometimes depending on wether software is case sensitive.

Examples:

Ctrl+Shift+F8 = \3\1\L\2\4

Ctrl+Shift+L = \3\1L\2\4

Ctrl+numpad 5 = \3/5\4

Lower case "a" = <A

Note that in first case the letter "L" is accompanied by "\" which means that the code that we send is F8 key, and in the second case the "L" isn't accompanied by any character, so just send the letter "L" as is.

In the third case the normal slash send a definition of one number on the number pad keys.

And finally, in fourth case, we sent the lower case "a" letter, since we have a prefix symbol "<", because by default are sent letter in capitals.

Note:

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