MiniMaus v.3A

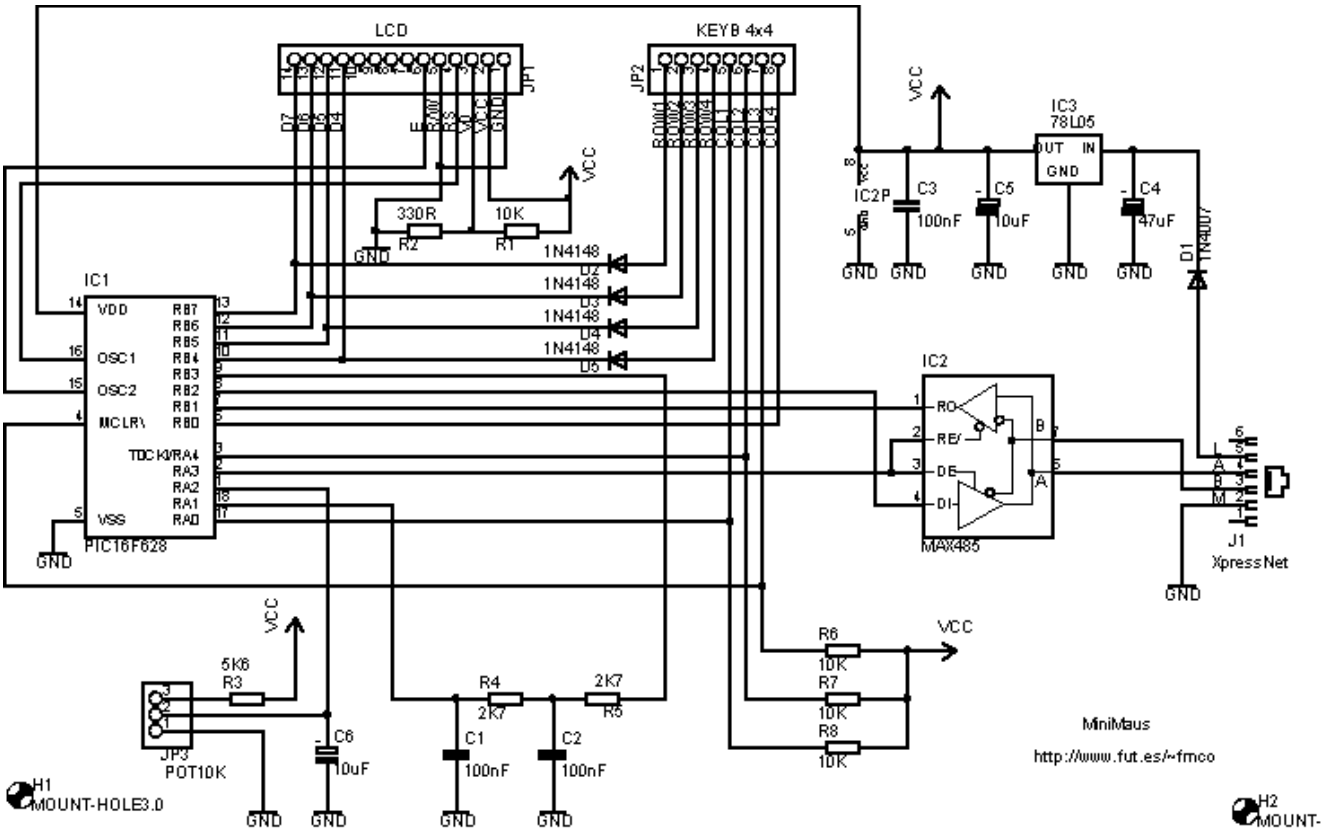
1.- Introduction

MiniMaus is a very simple throttle with LCD and keyboard, and the perfect complement for NanoX, also works with Lokmaus or Lenz systems, with the next features:

- Locomotive control from address 1 to 9999
- Light function control and additional F1 to F28 functions.
- 14, 28 y 128 steps selection for locomotive speed
- Turnout control from 1 to 999
- Programming and reading CV (1 to 1024)
- Emergency Stop button
- XpressNet address selection between 1 and 31
- Control speed by potentiometer
- List for 10 locomotives with names

2.- The circuit

Is a simpler circuit with a **PIC16F648A** without crystal oscillator working internally at 4MHz, it has a potentiometer, an LCD displays to show information, a 4x4 keyboard and a MAX485 to connect to XpressNet bus.



http://www.fut.es/~fmco
http://usuaris.tinet.org/fmco

3.- Keyboard

MiniMaus uses a 16 keys keyboard with this distribution:

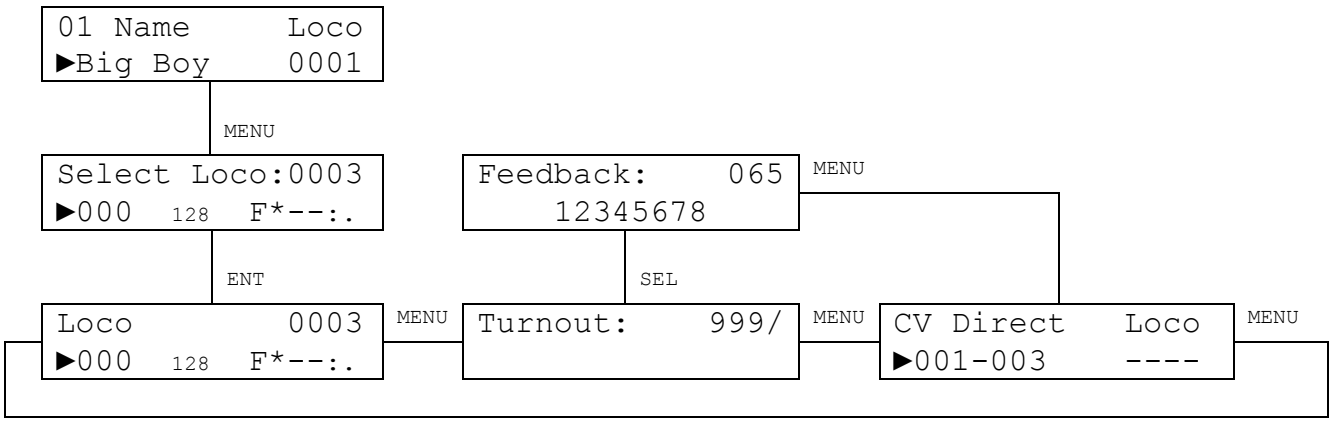
1	2	3	STOP
4	5	6	MENU
7	8	9	ENT
<	0	>	SEL

STOP: Emergency stop
MENU: Next menu
ENT: Enter/Exe
SEL: Selection
<: Decrement
>: Increment

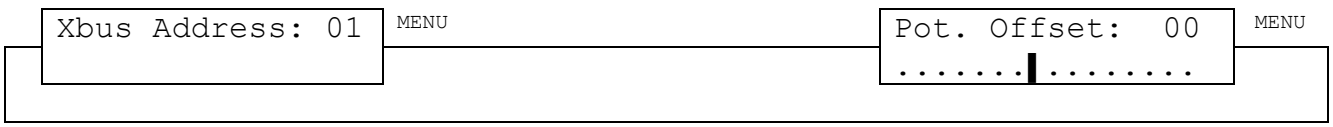
4.- Menus

The LCD screen shows current control information, to change between control menus press key MENU.
There are two modes, normal operations mode to control locomotives, turnouts and programming CV and Setup mode to configure MiniMaus with th Xbus address and the system to which is connected.

Operations Mode



Setup Mode



5.- Operations mode

5.1.- Welcome screen

When powered, MiniMaus shows the welcome screen with current version and the author:

```
MiniMaus  v.3A
by  F.M.CAÑADA
```

After a second, locomotive control menu will be displayed, if MiniMaus can't connect to a command station an error is displayed, check cable and Xbus address of MiniMaus:

```
Command station
  Not  found!
```

5.2.- Locomotive operations mode

To control a locomotive and its functions select this menu:

```
Loco          0003
▶000  128  F*--:.
```

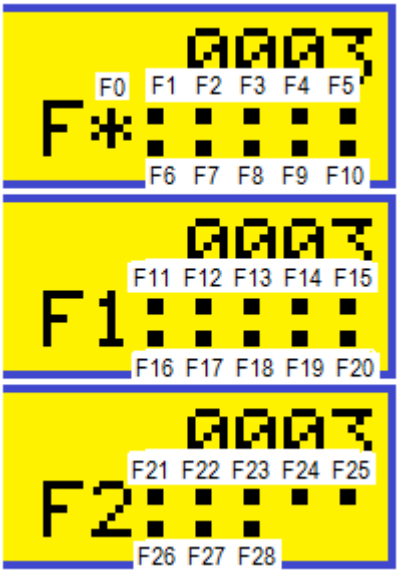
Shows:

1st line: loco name
loco number

2nd line: direction (▶: forward, ◀:backward)
speed (if locomotive is currently controlled by other throttle a '#' is show, if speed is different shows '<' or '>' to move pot in that direction)
speed steps
active functions (**F**: F0..F10, **F1**: F11..F20, **F2**: F21..F28)

Keys:

1: F1, F11 o F21
2: F2, F12 o F22
3: F3, F13 o F23
4: F4, F14 o F24
5: F5, F15 o F25
6: F6, F16 o F26
7: F7, F17 o F27
8: F8, F18 o F28
9: F9 o F19
0: F10 o F20
<: F0 (light)
>: Shows F0..F10, F11..F20 or F21..F28 to control it
SEL: Changes direction of travel
ENT: Locomotive selection menu



To change the current controlled locomotive to other press 'ENT' key to enter locomotive selection menu.

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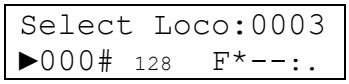
5.3.- Locomotive selection menu

To control a new loco press ‘ENT’ in locomotive operations menu to get the selection menu:



Shows:

1st line: loco number input

2nd line: current loco:
direction (►: forward, ◄:backward)
speed (if locomotive is currently controlled by other throttle a ‘#’ is show)
speed steps
active functions (**F**: F0..F10, **F1**: F11..F20, **F2**: F21..F28)

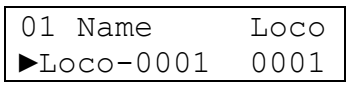
Keys:

0…9: loco number input (1…9999)
<: selects previous locomotive in list
>: selects next locomotive in list
ENT: Control selected loco (0000: the current one)
SEL: speed step selection (14, 28 or 128) current loco must be stopped!
MENU: Locomotive list menu

If you don’t type any number and press ‘ENT’ to exit this menu you will continue controlling current locomotive.

5.4.- Locomotive list menu

To modify name and address of tje locomotives in list, press ‘MENU’ in the locomotive selection menu:



Shows:

1st line: Locomotive list order

2nd line: Locomotive name
Locomotive address

Keys:

0…9: List selection (► in name) Locomotive number input (► in address)
<: previous char selection
>: next char selection
ENT: Saves selected carácter
SEL: Moves to the next carácter or locomotive number
MENU: locomotive selection menu

5.5.- Turnout operations

To control turnout, signals and accessories use this menu:

```
Turnout:     999/
```

Shows:
1st line: turnout number input and position
2nd line: -

Keys:
0…9: turnout number input (1…999)
<: straight
>: diverge
SEL: Feedback status menu

If you use MiniMaus with NanoX command station, program it to use Lenz mode (PoM CV7=50, CV7=77), if not, an offset of 4 will be produced.

5.6.- Feedback

To see the current status of the feedback modules connected to the command station, use this menu:

```
Feedback:    065
    12345678
```

Shows:
1st line: Feedback number selection
2nd line: Status of the feedback inputs

Keys:
0…9: Module number input (1…128)
SEL: Turnout operations menu

Depending of the type of feedback module the current input status is shown:

Feedback:	1..8:	Active input
	- :	Inactive input
Turnouts:	/:	Diverge
	|:	Straight
	?:	Not moved
	!:	Erroneus status

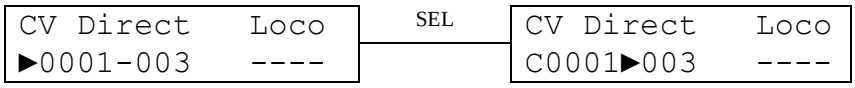
If the feedback module isn't installed it will show: '……..'

5.7.- CV programming and reading

With MiniMaus you can program CV and read (if command station is capable) in four different modes (Direct, Paged, Register and PoM).

For Direct and Paged modes you can select CV 1 to 1024, in Register mode select CV 1 to 8, and in PoM mode you can select CV 1 to 1024 (remember that in PoM mode you only can program CV, read is only possible with a external module using RailCom)

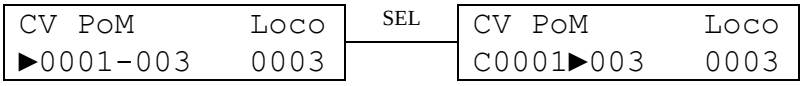
If '►' is pointing CV number with 'ENT' key, you read the CV value, if it is pointing CV data, with 'ENT' key you write the CV.



Shows:

1st line: programming mode (Direct, Paged, Reg and PoM)
2nd line: modify selection (►)
CV
Value (if an error was detected reading or programming a CV '◄? ►' is showed)
Loco selected for PoM mode

Keys:



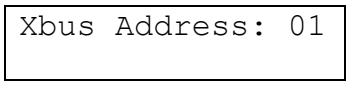
	Modify CV number	**Modify CV value**
0..9	CV number	CV value
< :	Direct► PoM►Reg►Paged	Direct► PoM►Reg►Paged
> :	Direct►Paged►Reg►PoM	Direct►Paged►Reg►PoM
ENT :	Read CV	Program CV

SEL: changes between modify CV number and modify CV value

6.- Setup mode

To enter setup mode press ENT while plugging MiniMaus, to exit setup mode just press STOP.

6.1.- Xbus address selection



Shows:
1st line: Xbus address (1…31)
2nd line: -

Keys:
<: decrement address
>: increment address

6.2.- Potentiometer offset selection

Shows:
1st line: Potentiometer offset (0…15)
2nd line: Potentiometer current position

Keys:
<: decrement offset
>: increment offset

Set the most suitable value to move screen potentiometer cursor from top left to top right