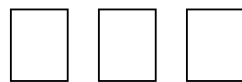


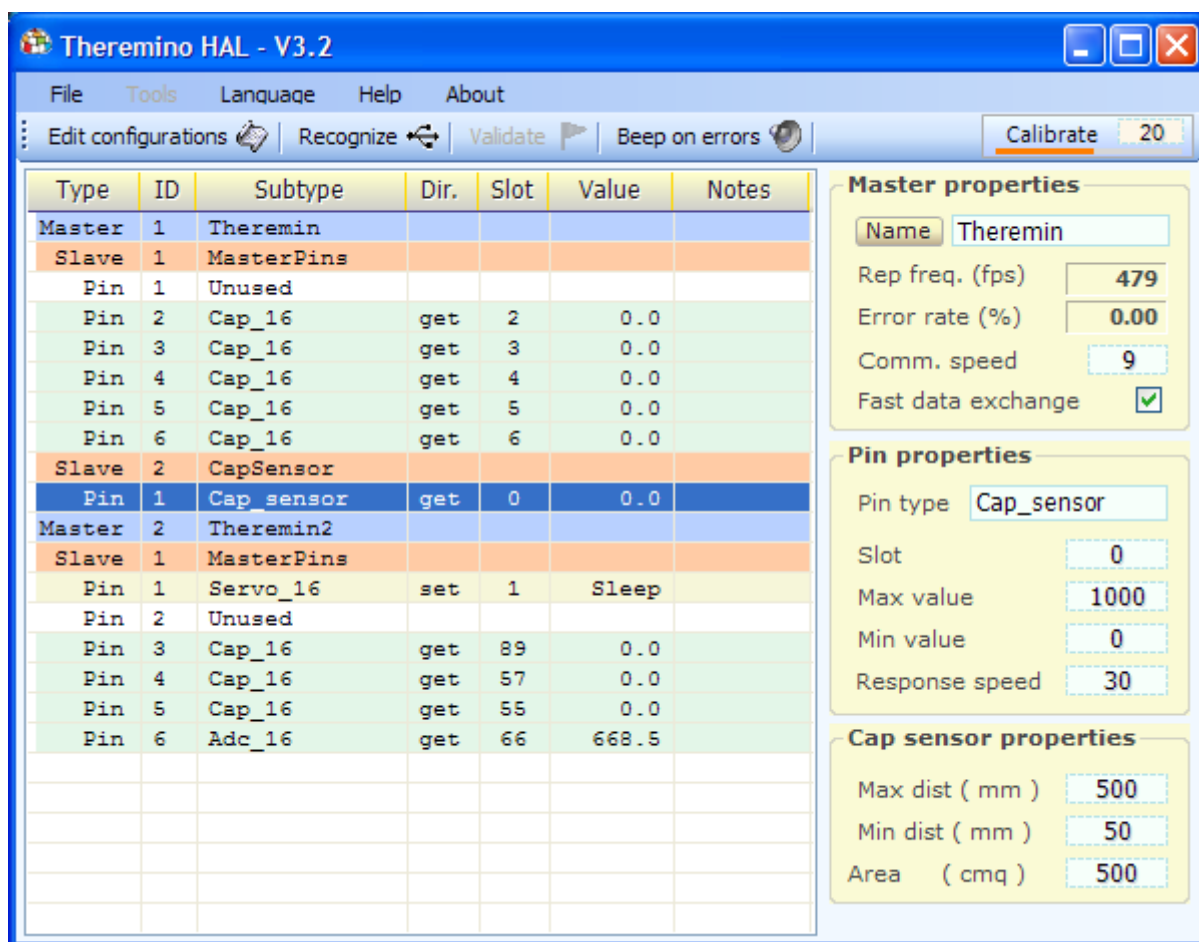
**theremino**  
•the•real•modular•in-out•

□□□□ Theremino

# Theremino HAL



# Theremino HAL

[illegible]

ThereminoHAL -  
 - HAL

ThereminoHAL

USB InputOutput " " "

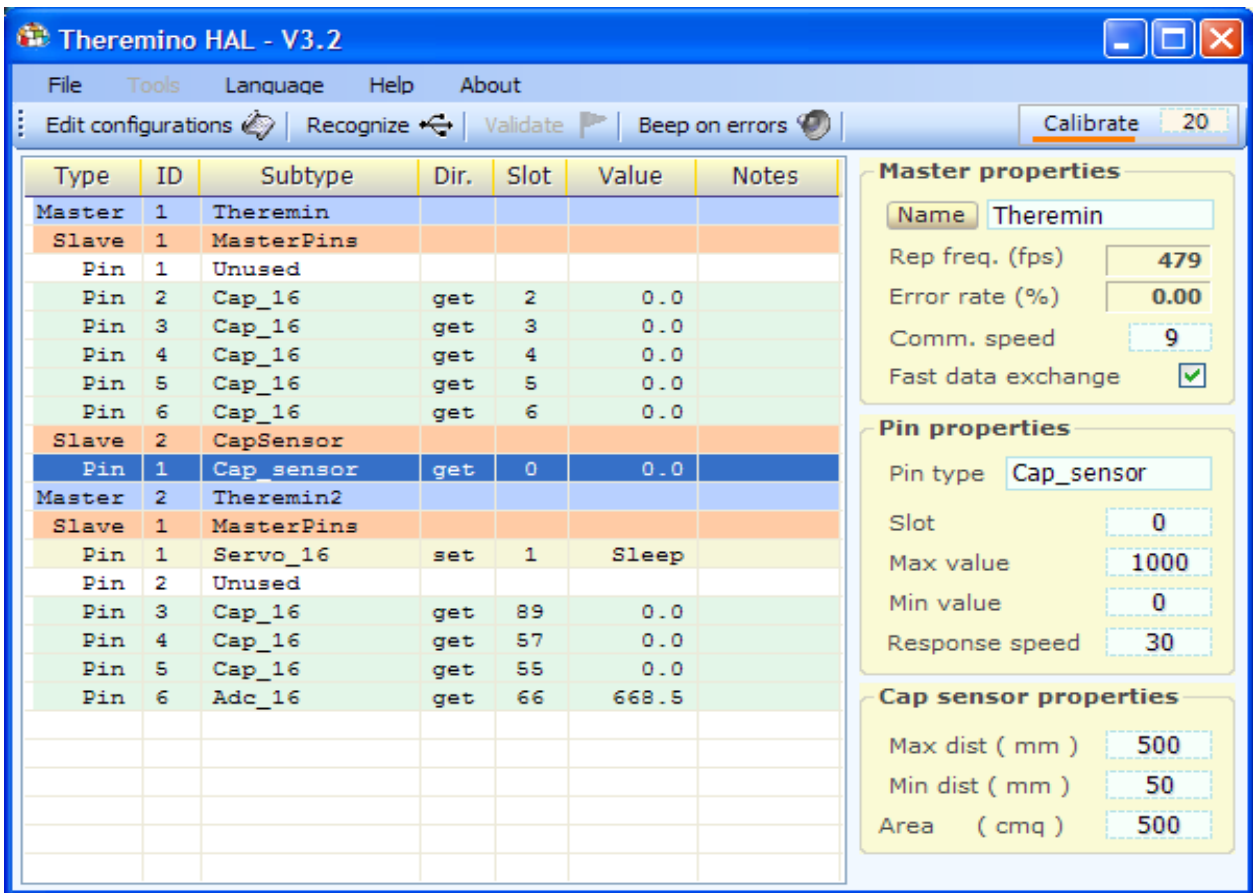
[illegible][illegible]

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Theremino " "



HAL ☐ ☐

[illegible][illegible]

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□□□□□ "CapoSensor"

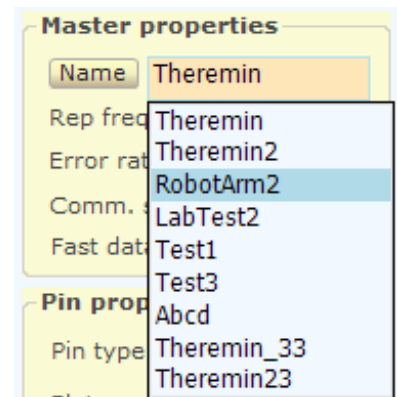
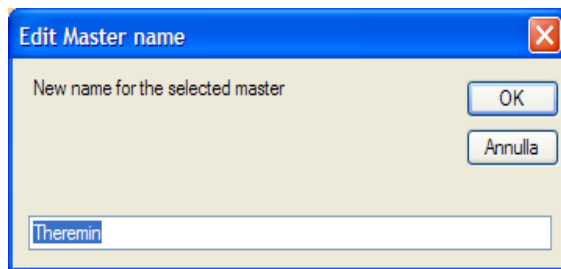
CapTouch 2

"□□□□□□" "□□□□□□□□□□□□□□"

□□□□ "□□" *Cap 16* □□□□□□

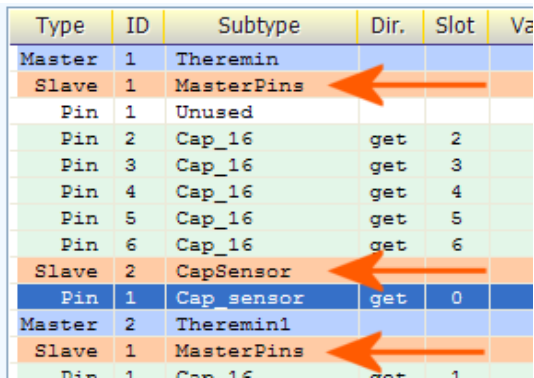
**Master properties**

Name	Theremin
Rep freq. (fps)	495
Error rate (%)	0.00
Comm. speed	9
Fast data exchange	<input checked="" type="checkbox"/>



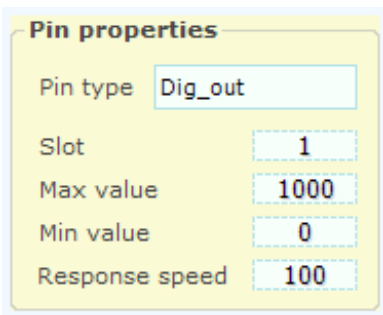
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[illegible]





[illegible]

0 1000

2

[illegible]

"□□"□□□□□ - □□□/ PWM /□□□

## DIG\_OUT

**Pin properties**

Pin type

Slot

Max value

Min value

Response speed

[illegible]

10□□□□□ - □□□□□□0V□□□□□□3.3 V□□□□□□□□□□+ /  
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◆ Pwm\_8 □ Pwm\_16

**Pin properties**

Pin type

Slot

Max value

Min value

Response speed

**PWM properties**

Max time (  $\mu$ S )

Min time (  $\mu$ S )

Logarithmic response ☐

PWM

[illegible][illegible]

□□□□0V□□□□3.3□□□□□□□□□□□□□□□□□□□□+ / □□□□  
□□□□□ - 10□□□□□□

🔸 Servo\_8 □ Servo\_16

**Pin properties**

Pin type

Slot

Max value

Min value

Response speed

**Servo properties**

Max time (  $\mu$ S )

Min time (  $\mu$ S )

[illegible][illegible]

□□□□□□□□□□ min □ max □□□□ 180 □□□□□□□□□□  
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3  6

0     3.3

"□□"□□□□□□ - □□□ / **ADC** / □□□□□ / □□□

◆ Dig\_in □ Dig\_in\_pu

**Pin properties**

Pin type

Slot

Max value

Min value

Response speed

[illegible]

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00000000= 10000000= 2000 SchmittTrigger0000  
0000 "00" "00"/000000000000 "0  
00"0000000000000000000000000000  
00000000000000000000
```

◆ **Adc\_8** ☐ **Adc\_16**

**Pin properties**

Pin type	Adc_16
Slot	1
Max value	1000
Min value	0
Response speed	30

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[illegible]

◆ Cap\_8 □ Cap\_16

**Pin properties**

Pin type

Slot

Max value

Min value

Response speed

**Touch properties**

Min variation

Proportional area

[illegible]

Makey Makey ON-OFF " " " "

" " " "

" " " "

[illegible]

□□□16□17□18□19□□20□□□□□□□□□□□□□□□□

◆ Res\_8 □ Res\_16

**Pin properties**

Pin type

Slot

Max value

Min value

Response speed

00000000000000000000**50**000000000000000000000000000000  
00**2**000  
000  
00**3.3**0000000000000000**USB****5**00000000000000000000000000  
000




Counter\_pu

**Pin properties**

Pin type

Slot

**Freq. properties**

Convert to frequency ☐

Counter\_pu  
kHz

FastCounter

➤ "□□□"□□□□□ Counter\_pu

**Pin properties**

Pin type

Counter

Slot

1

Max value

999999

Min value

0

Response speed

100

**Freq. properties**

Convert to frequency

☒

Max freq ( Hz )

50000000

Min freq ( Hz )

0

```

00000000 Counter_pu 00000000000000000000000000000000
0000000000000000

```

```
"0000" "00000000"00000000000000000000 "00
true" "000"0000 "0000"000000000000000000000000
000
```

"Counter\_Pu"16

## " " - Fast\_counter

### ◆ Fast\_counter Fast\_counter\_pu

Pin properties	
Pin type	Fast_counter
Slot	1

Freq. properties	
Convert to frequency	<input type="checkbox"/>

Fast\_counter Fast\_counter\_pu

50 MHz 50

### ◆ " " Fast\_counter Fast\_counter\_pu

Pin properties	
Pin type	Fast_counter
Slot	1
Max value	999999
Min value	0
Response speed	100

Freq. properties	
Convert to frequency	<input checked="" type="checkbox"/>
Max freq ( Hz )	50000000
Min freq ( Hz )	0

Fast\_counter Fast\_counter\_pu

" " " " true" " " " "

"Fast\_counter" "Fast\_counter\_pu" 16

[illegible]

◆ ☐ ☐ ☐ **Period\_pu**

**Pin properties**

Pin type

Slot

**Freq. properties**

Convert to frequency ☐

[illegible][illegible]

◆ "□□□"□□□□Period\_pu

**Pin properties**

Pin type

Period

Slot

1

Max value

1000

Min value

0

Response speed

30

**Freq. properties**

Convert to frequency

☒

Max freq ( Hz )

1000000

Min freq ( Hz )

0

Period\_pu

[illegible][illegible]

" " "Period pu" 32

## " " " " " " - Usound CapSensor

### ◆ Usound\_sensor

Pin properties	
Pin type	Usound_sensor
Slot	1
Max value	1000
Min value	0
Response speed	30
UltraSound properties	
Max dist ( mm )	1000
Min dist ( mm )	0

SRF05

33 " " 0 32000

"HAL"

"Usound\_sensor" pin 16

### ◆ CapSensor\_HQ

Pin properties	
Pin type	Cap_sensor
Slot	0
Max value	1000
Min value	-5
Response speed	30
Cap sensor properties	
Max dist ( mm )	500
Min dist ( mm )	50
Area ( cmq )	50

"DIST" "dist" " " " " "

"CapSensor\_HQ" pin 24

CapSensor "DIST" "DIST"





"□□□□"□ "□□ □□□ "

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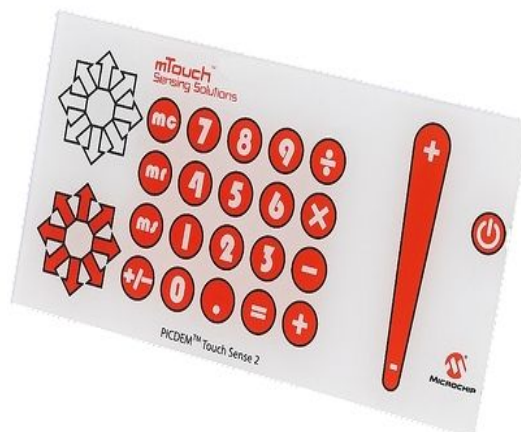
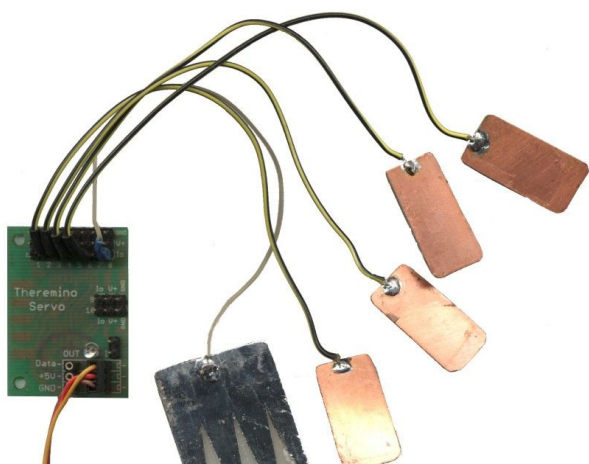
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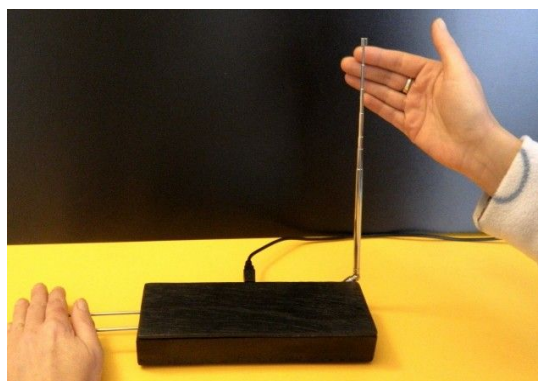
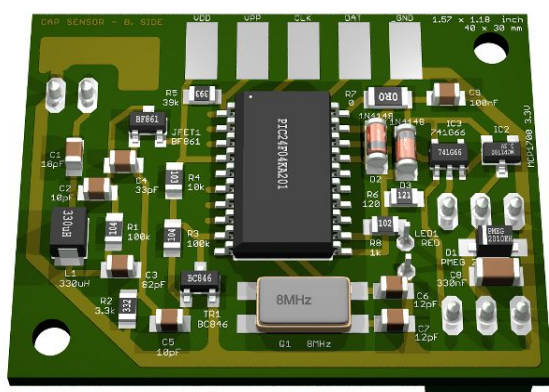




# CapacitiveKeys CapSensors



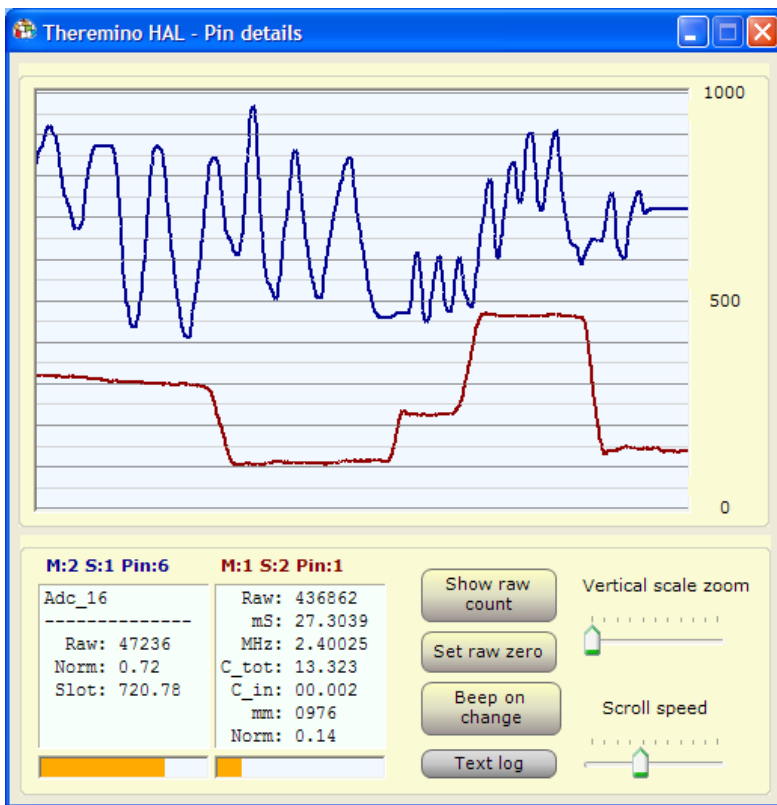
CapSensors CapSensor



"

vetronite

5 10 "



□□ "□□□□2□□□□1□□□6"□□□□  
□□□□□□□□□□□□□□□□□□□□□□

```
00000000000000000000000000000000 "0"000 00000000000000000000000000000000 0001000 "0"000
00000000000000000000000000000000 00000000000000000000000000000000 "000"000000 "0000"000000
00000000000000000000000000000000
```

- ```

0x00000000 "0"
0x00000000
0x00000000 0x00000000
0x00000000 0x00000000
C_tot 0x330 UH0xCapSensorHQ0x
C_IN 0xCapSensorHQ0x
0x00000000 0xCapSensorHQ0x
0x0000 FIR0xCAP8CAP160x
0x 0xCAP8CAP160x
0x00 010x
0x0000 0x110000x
0x "0"0x "1"0xDIGOUT0x

```

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Draw speed (fps) 5

[illegible]

**1** .  
 www.theremino.com / / " "  
 " " "

[illegible]

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```

#####
##### " .. \####\ Language_Eng.txt"   " .. \####\ Language_Ita.txt"
#####
" .. \####\ Language_Deu.txt"   " .. \####\ Language_Fra.txt"   " .. \####\
Language_Esp.txt"

```

**HAL**

**losed**

**CPU**

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