

# PAC1934 click

PID: MIKROE-2735



**PAC1934 click** carries the PAC1934 four channel DC power/energy monitor from Microchip. The click is designed to run on either 3.3V or 5V power supply. It communicates with the target microcontroller over an I2C interface.

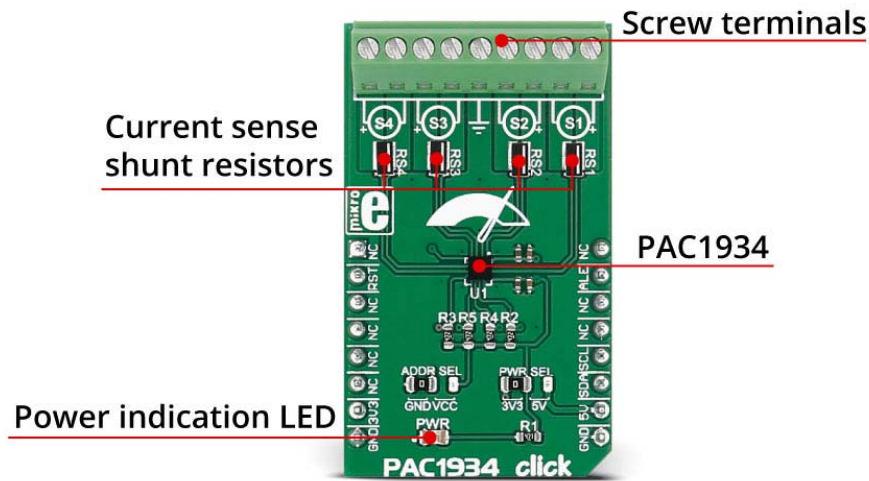
## How the click works

There are four 4-Terminal current sense shunt resistors connected to the current sense amplifier (in the chip). Electricity is brought to shunts via screw terminals. Middle screw connector is GND which can be used for bus voltage monitoring.

This click enables energy monitoring with integration periods from 1 mS up to **36 hours or longer**. Bus voltage, sense resistor voltage, and accumulated proportional power are stored in registers for retrieval by the system master or Embedded Controller.

## PAC1934 energy monitor features

The PAC1934 is a four channel bi-directional high-side current-sensing device with precision voltage measurement capabilities, DSP for power calculation, and a power accumulator. It measures the voltage developed across an external sense resistor (VSENSE) to represent the high-side current of a battery or voltage regulator. The PAC1932/3/4 also measures the SENSE1+ pin voltages (VBUS).




## Specifications

Type	Measurements
Applications	Power management systems, embedded applications, servers, personal computers, etc.
On-board modules	PAC1934 four channel energy monitor from Microchip
Key Features	1% power measurement accuracy over a wide dynamic range, alert feature on accumulator overflow and conversion complete, that could be enabled
Interface	I2C
Input Voltage	3.3V or 5V
Click board size	M (42.9 x 25.4 mm)

## Pinout diagram

This table shows how the pinout on **PAC1934 click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
		1	AN	PWM	16		
	NC	1	AN	PWM	16	NC	
Reset	<b>RST</b>	2	RST	INT	15	<b>ALE</b>	Alert pin
	NC	3	CS	TX	14	NC	
	NC	4	SCK	RX	13	NC	
	NC	5	MISO	SCL	12	<b>SCL</b>	I2C clock
	NC	6	MOSI	SDA	11	<b>SDA</b>	I2C data
Power supply	<b>+3.3V</b>	7	3.3V	5V	10	<b>+5V</b>	Power supply
Ground	<b>GND</b>	8	GND	GND	9	<b>GND</b>	Ground

## Jumpers and settings

Designator	Name	Default Position	Default Option	Description
JP1	PWR.SEL.	Left	3V3	Power Supply Voltage Selection 3V3/5V, left position 3V3, right position 5V
JP2	ADDR.SEL.	Left	20h	I2C Address select - Left position 20h, Right position 3Eh

## LEDs, Buttons, Switches, Connectors, etc.

Designator	Name	Type (LED, BUTTON...)	Description
LD1	PWR	LED	Power indication LED

## Programming

Code examples for PAC1934 click, written for MikroElektronika hardware and compilers are available on Libstock.

### *Code snippet*

The following code snippet shows how to measure Current, Voltage, Power and Energy using the PAC1934 library.

```
01 char txt [30];
02     float readValue;
03     PAC1934_sendCommand (_PAC1934_REFRESH_CMD);
04     delay_ms (200);
05
06     readValue = PAC1934_measureVoltage(4);
07     FloatToStr(readValue, txt);
08     LOG ("VBUS 4:      ");
09     LOG (txt);
10     LOG (" Vrn");
11
12     readValue = PAC1934_measureCurrent(4);
13     FloatToStr(readValue, txt);
14     LOG ("Current 4:    ");
15     LOG (txt);
16     LOG (" mArn");
17
18     readValue = PAC1934_measurePower(4);
19     FloatToStr(readValue, txt);
20     LOG ("Power 4:      ");
21     LOG (txt);
22     LOG (" Wrn");
23
24     readValue = PAC1934_measureEnergy(4, 8);
25     FloatToStr(readValue, txt);
26     LOG ("Energy 4:     ");
27     LOG (txt);
28     LOG (" Jrn");
29
30     LOG ("_____rn");
31     delay_ms (10000);
```