INHAOS™

CH-6060

USB2.0 High Speed Current Sense Hub

◆ USB 2.0 hub with high performance and reliability are fully compatible with USB2.0 Specification. Three downstream can extend the number of USB interface.

◆ Built-in current measurement . It's very easy for measuring current of USB-powered products, simply by pluging the DUT into a hub.

◆ 4 range with measuring limit 0~600 mA to measure operating current of USB products, with higher accuracy and more apporiate than digital ammeter.

◆ Extended modules can be used in battery-power products for analyzing the battery current consumption, to improve the product power consumption and extend battery life.

High-performance USB Hub

USB interface is almost in all computer peripherals. As PC's USB interface is not enough for use, you need a high-performance USB hub to expand the number.

Built-in Current Measurement

For now, current measurement is still rely on the digital ammeter. It costs trouble for USB device development. And you need to destroy USB cable to serial current ammeter to power supply circuit. It is very bad for USB signal integrity.

High-precision Current Measurement

We need more high-precision current measurement, and wider measurement range. The existing ammeter's accuracy is greatly affected in high current, and easily exceed the measuring range in low current.

Draw and Analysis of Current Curve

In many cases, current curve and further analysis are necessary. Point current reading is not enough, while the ammeter measurement speed is too slow.

Additional Functionality of Expansion Module

USB interface can provide 500mA of current externally. More extended modules are provided to simulate the battery power, and track the current consumption.

USB engineers are always complaining no suitable instrument to accurately measure the USB current consumption. Even high-precision digital current ammeter is only single point measurement. But the USB working condition is so complex that a single point current measurement can only provide the average consumption current. In most case, such measurements are meaningless.

In some cases, we can serial a sample resistor in circuit, and then use the oscilloscope to measure the currents. Ah, this is really a good idea, but very limited, In small current, actual current signal will be drowned by the noise, you totally do not know which waveform is the actual current signal and which is the noise. Second, the storage depth of the oscilloscope is limited to store more high-resolution data, hard to track and control current completely under different working conditions.

Battery-powered mobile handset engineers have the same complaint. They are eager to reduce the power consumption, 5mA, 1mA, 200uA, 20uA ... ... Yes, we need to lower the standby power consumption. The most common approach is to make the controller sleep most of the time, and then wake it up periodically for the necessary work. But how to track the current accurately ?

So we designed CH-6060. It's a USB2.0 HUB also for current measurement. The USB Hub has three downstream, port 1 for current measurement, 2 and 3 are general-purpose port with current overload protection, you can use as a computer USB interface expansion.

Current detection circuit is also technical. Measuring range of 0~600 mA is in full compliance with USB power supply characteristics. We offer seamless switching of 4 range to reduce the impact of the sampling circuit loop. The system can ensure the most appropriate test accuracy in automatic switching.

The highest 10Ksps bandwidth means every 100uS will be a current collection of data uploaded to the PC, the software records each data collection, and sketch a curve with powerful analysis.

You can customize individual analysis features, deliver the data collected to your own software by our DLL. we provide a rich API to complete almost all functions.

CH-6060

USB2.0 High Speed Current Sense Hub

Technical Support

We have rich experience in low-power development .Contact us if you need assistance.

Perfect After-sales Service

If the product needs repair or calibration, we can offer alternative products without being hindered.

Applications

- USB interfaced product development
- Battery and other low-power product development
- Educational
- Power Consumption Test on production line
- Simulation testing of USB certification testing to control current consumption of the product under test

Headquarter:

540 Mill River LN San Jose, CA 95134
TEL: +1-408-506-9612
E-mail: Yuming.liu@inhaos.com

China:

No.6 Building, Songke Estate, Songshan Lake National Hi-tech Industrial Development Zone, Dongguan, Guangdong Province, China
TEL: +86-769-38988860
E-mail: support@inhaos.com

Functions and Parameters

USB Hub Features

- USB2.0 high speed hub chip NEC uPD720114 4-port ECOUSB™ controller
- Certified by USB-IF (Test ID = 30000001, 30000004)
- Full compliance with USB2.0 specification
- Support 3 downstream, current measurement function on port 1
- Support bus-powered and self-powered mode
- Integrated "Transaction Translator", support the new "Split Transaction" Protocol
- Adaptive upstream speed, support high-speed and full-speed hub
- Complete protection measures to ensure safe operation
- Rich LED indicator, indicate normal operation and over-current protection status
- Windows XP and Windows2000 WHQL certification (Submission ID = 1025324)

Current Measurement Features

- Current measurewent at front port
- Current range : 0~600mA
- Best precision: less than 0.5% (60uA ~ 600mA)
- 4 range automatic switching
- Maximum sampling rate 200Ksps, Maximum Bandwidth 10Ksps
- Complete PC application software to trace, record, analysis data
- Set digital filter for high-precision measurements
- Support for Windows XP 、 Windows Vista /7
- DLL for writing appropriate applications

Advantages

- Easy to use, with 3 high-speed USB2.0 port available
- Small and portable, easy to carry out as an engineer desk tool
- High precision, 4 range current sampling, high-speed seamlessrange swithcing
- Wider application, enhanced by extended modules
- Low cost, with higher cost peroformance

Performance

No.	Name	Unit	Condition	Typical	Note
1	Current Consumption	mA	All the USB downstream no load	50	
2	Downstream current protection	mA	No external power supply	600	
3	USB Host current protection	mA	No external power supply	500	
4	External power supply voltage	V		5.0	Please use original accessories

Current Measurement Parameters

No.	Range	Sampling resisitor(Ω)	Current Range(mA)	Max Sample Voltage(mV)	Max Current (mA)	Typical Precision
1	I	0.2	60~600	120	600	±0.5%+1
2	II	2	6~60	120	60	±0.5%+1
3	III	20	0.6~6	120	6	±0.5%+1
4	IV	200	0.06~0.6	120	0.6	±1%+1

Dimension

No.	Name	Unit	Measurement Condition	Parameters	Note
1	Temperature	℃	Suitable Temperature	+5℃ to + 40℃	
		℃	Storage Temperature	40℃ to + 75℃	
2	Humidity	%RH		80%RH to at least+90℃	
3	Dimension	mm	L*W*H	230*176*57	
4	Weight	g	bare device without the attachment	147	

The numbers listed above are typical , INHAOS retains the right to change the paraments without notice.

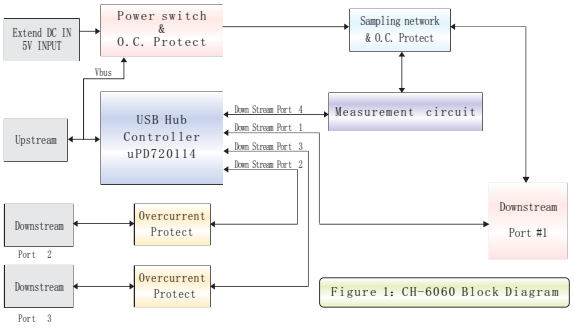
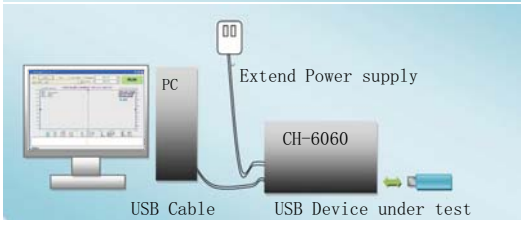
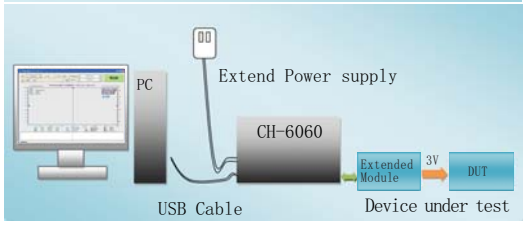


Figure 1: CH-6060 Block Diagram

Application 1: USB Products Current Measurement



Application 2: Battery Products Current Measurement



For more application, please visit our web site:www.inhaos.com