Otii Arc

Product Specification

Otii Arc is the ultimate tool for energy optimization of battery-driven devices. Made for hardware, firmware and software developers.
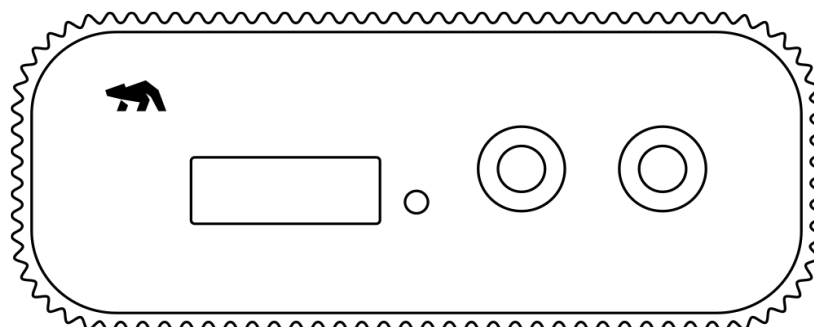
Otii Arc
Otii Arc is a small, portable power supply, a current and voltage measurement unit and a data-acquisition module. It is powered by USB and optionally by using an external DC-adapter. See technical specification below.
Otii Arc is shipped with a USB A to uB cable.

Otii desktop application
Otii Arc comes with free Otii basic software with possibility to upgrade. The Otii application is a powerful and easy-to-use desktop application for Windows, Ubuntu & macOS.

Download the desktop application at https://www.qoitech.com/download

Hardware spec in short

Sample rate
- 4ksps for main current channel
- 1ksps for all other channels (main voltage, adc current, adc voltage, sense+, sense-, UART RX, GPI1, GPI2)

Accuracy current measurement
- +-(0,1% + 50nA) accuracy below 19mA and +-(0.1%+150uA) above 19.5mA
- 5nA current measurement resolution
- 24bit ADC with automatic switching between ranges

Power supply
- 0.5-5.0V
- USB only (0.5-3.75V in auto range mode, 0.5-4.2V in high range mode)
- DC plug supply (0.5-4.55V in auto range mode, 0.5-5.0V in high range mode)
- 0-5A (depends on available current from USB or DC plug)

Digital interface
- Digital IO voltage 1.2-5.0V
- Max 10mA source and sink in total

Software features in short

- Basic measurements (current, voltage, power)
- GPI measurements
- ADC (sub-system) measurements
- Basic statistics
- Check statistics of the accumulated energy consumption while recording
- Select a part of recording for analysis, while recording continues in the background
- Name recordings
- Export data to CSV
- Save/load projects
- Unlimited undo/redo
- Offset calibration

Hardware specifications

	Min	Unit	Max
Operating Environment			
Operating environment	15 °C / 60 °F		30 °C / 86 °F

	Min	Unit	Max
USB Power Supply[1]			
Output voltage (auto range)	0.5 V		3.75 V
Output voltage (locked to high current range)	0.5 V		4.2 V
Output voltage setting resolution		1 mV	
Output current		up to 1A [1]	

	Min	Unit	Max
External 7.5 – 9 V Power Supply[2]			
Output voltage (auto range)	0.5 V		4.55 V
Output voltage (locked to high current range)	0.5 V		5.0 V
Output voltage setting resolution		1 mV	
Output current, max continuous[3]		2.5 A	
Output current, max peak[3]		5 A	

	Min	Unit	Max
Programmable Current Sink (requires an Otii Battery Toolbox license)			
Sink current	0 A		2.5 A
Sink current, resolution		39 µA	
Sink voltage, USB power supply	0.85 V[4]		4.2 V
Sink voltage, external power supply	0.85 V[4]		5 V

	Min	Unit	Max
Current measurement			
Accuracy		$\pm(0.1\% + 50\ nA)$[5]	
Sample Rate in ±19 mA range		4 ksps	
Sample Rate in ±2.7A range		1 ksps	
Sample Rate in ±5.0 A range		1 ksps	
Analog bandwidth (3 dB)		400 Hz	

	Min	Unit	Max
Voltage measurement			
Total accuracy		$\pm(0.1\% + 1.5\ mV)$	
Sample Rate		1 ksps	

	Min	Unit	Max
UART			
Bitrate	110 bps		5.25 Mbps

Digital I/O; GPO1, GPO2, TX[6]

V_{IO} Expansion port operating voltage	1.2 V	VIO[7]	5 V[8]
V_{IL} Low-level input voltage			V_{IO} * 0.2 V
V_{IH} High-level input voltage	V_{IO} * 0.8 V		
I_{max} Maximum sink/source current			10 mA

ADC, Differential Analog/Digital Conversion pins ADC-, ADC+ [9]

Voltage input	0 V		5 V
Shunt voltage range	-81.9175 mV		81.2 mV
Resolution		2.5 µV	
Accuracy		±(0.1% + 10 µV)	
Input impedance		220 kΩ	

ADC, Single Ended Analog/Digital Conversion pin ADC+

Voltage input	0 V		5 V
Resolution		1.25 mV	
Accuracy		±(0.1% + 7.5 mV)	
Input impedance		830 kΩ	

SENSE, pins SENSE- and SENSE+

Voltage input	0 V		5 V
Resolution		1.5 mV	
Accuracy		1%	
Input impedance		1 MΩ	

[1] USB power capacity and reliability in laptops and desktops greatly depend on host USB port/cable design.
[2] See list of recommended external power supplies and powered USB hubs at our FAQ
[3] Depends on chosen power supply. Otii Arc will monitor internal temperature and cut off if temperature limit is reached.
[4] Sink voltage can go below this specification if locked to high range. It is possible to go down to 0.5 V if the sink current is below 1.9 A. For currents below 19 mA, the measurement will have a lot more noise when locked to high range than in auto range.
[5] Up to 19 mA current in auto range, for higher currents, the accuracy is ±(0.1 % + 150 µA). Average > 1 s.
[6] See Nexperia SN74LVC8T245 for details.
[7] Expansion Port Digital voltage level is set by user in Otii SW.
[8] Maximum voltage will depend on your USB power supply and USB cable.
[9] See TI INA226 for details.

QOITECH

Qoitech is a Swedish company bringing to market the most effective developer tools for visualisation, measurement and analysis of energy consumption of battery driven products. By enabling ease of use, our toolboxes help developers, throughout the stack, to develop for longer battery life, shorter development time and increased product quality.

Learn more at www.qoitech.com.

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