

The Yocto-milliVolt-Rx device is a high accuracy USB voltmeter. It lets you measure by USB very small voltages (down to a few dozen of microVolts, and up to 2V max), even when they are generated by extremely weak sources (very high impedance).

Typical applications include measurement of electro-chemical reactions (e.g. pH and redox probes), low-voltage sensors (e.g. gaz sensors, etc), or Wheatstone bridges (e.g. load cells, etc). It is also possible to use this device to accurately measure the voltage drop across a shunt to measure high currents.

The input circuit of this device uses a very low bias current amplifier (typ. 0.2 pA). The measure circuit is electrically insulated from the USB bus, which makes it possible to measure grounded voltages without risk of creating a ground loop.

For measuring the weakest signals (e.g. pH measurements), we recommend to use the BNC variant of this product, which features a BNC connector to use with coaxial cable, to avoid electromagnetic interference.

## Specifications

Width         20 mm           Length         45 mm           Weight         6 g           Channels         1           Input bias current (typ.)         > 1 pA           Refresh rate         100 Hz           Input impedance         1000 GΩ           Measuring range         -1000 +2000 mV           Accuracy         0.1 %           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         5 40 °C           Extended operating temperature <sup>‡</sup> -30 85 °C           RoHS compliance         ROHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Product ID	RXMVOLT1
Length         45 mm           Weight         6 g           Channels         1           Input bias current (typ.)         > 1 pA           Refresh rate         100 Hz           Input impedance         1000 Gg           Measuring range         -1000 +2000 mV           Accuracy         0.1 mV           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         5 40 °C           Extended operating temperature <sup>‡</sup> ROHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	USB connector	micro-B
Weight         6 g           Channels         1           Input bias current (typ.)         <> 1 pA           Refresh rate         100 Hz           Input impedance         1000 Gz           Measuring range         -1000 +2000 mV           Accuracy         0.1 %           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         5 40 °C           Extended operating temperature <sup>‡</sup> RoHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Width	20 mm
Channels         1           Input bias current (typ.)         ⇒ 1 pA           Refresh rate         100 Hz           Input impedance         1000 Gg           Measuring range         -1000 +2000 mV           Accuracy         0.1 %           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         540 °C           Extended operating temperature <sup>‡</sup> RoHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Length	45 mm
Input bias current (typ.)         <> 1 pA           Refresh rate         100 Hz           Input impedance         1000 GΩ           Measuring range         -1000 +2000 mV           Accuracy         0.1 %           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         540 ° C           Extended operating temperature <sup>‡</sup> 3085 ° C           RoHS compliance         ROHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Weight	6 g
Refresh rate         100 Hz           Input impedance         1000 GΩ           Measuring range         -1000 +2000 mV           Accuracy         0.1 %           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         540 ° C           Extended operating temperature <sup>‡</sup> 3085 ° C           RoHS compliance         ROHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Channels	1
Input impedance         1000 GΩ           Measuring range         -1000 +2000 mV           Accuracy         0.1 %           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         540 °C           Extended operating temperature <sup>‡</sup> -3085 °C           RoHS compliance         RoHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Input bias current (typ.)	<> 1 pA
Measuring range         -1000 +2000 mV           Accuracy         0.1 %           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         540 °C           Extended operating temperature <sup>‡</sup> -3085 °C           RoHS compliance         RoHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Refresh rate	100 Hz
Accuracy         0.1 %           Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         540 °C           Extended operating temperature <sup>‡</sup> -3085 °C           RoHS compliance         RoHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Input impedance	1000 GΩ
Sensitivity         0.01 mV           IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         540 °C           Extended operating temperature <sup>‡</sup> -3085 °C           RoHS compliance         RoHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Measuring range	-1000 +2000 mV
IEC protection class         class III           USB insulation, dielectric strength (1 min.)         1 kV           Normal operating temperature         540 °C           Extended operating temperature <sup>‡</sup> -3085 °C           RoHS compliance         RoHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24EC           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Accuracy	0.1 %
USB insulation, dielectric strength (1 min.)  Normal operating temperature  Extended operating temperature  From the Compliance  RoHS III (2011/65/UE+2015/863)  USB Vendor ID  USB Device ID  Suggested enclosure  YoctoBox-Short-Thick-Black  Harmonized tariff code	Sensitivity	0.01 mV
Normal operating temperature 540 °C Extended operating temperature -3085 °C RoHS compliance ROHS III (2011/65/UE+2015/863) USB Vendor ID 0x24EC USB Device ID 0x004C Suggested enclosure YoctoBox-Short-Thick-Black Harmonized tariff code 8542.3190	IEC protection class	class III
Extended operating temperature <sup>‡</sup> -3085 °C RoHS compliance RoHS III (2011/65/UE+2015/863) USB Vendor ID 0x24E0 USB Device ID 0x0040 Suggested enclosure YoctoBox-Short-Thick-Black Harmonized tariff code 8542.3190	USB insulation, dielectric strength (1 min.)	1 kV
RoHS compliance         RoHS III (2011/65/UE+2015/863)           USB Vendor ID         0x24E0           USB Device ID         0x004C           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Normal operating temperature	540 °C
USB Vendor ID         0x24E0           USB Device ID         0x0040           Suggested enclosure         YoctoBox-Short-Thick-Black           Harmonized tariff code         8542.3190	Extended operating temperature <sup>‡</sup>	-3085 °C
USB Device ID 0x0040 Suggested enclosure YoctoBox-Short-Thick-Black Harmonized tariff code 8542.3190	RoHS compliance	RoHS III (2011/65/UE+2015/863)
Suggested enclosure YoctoBox-Short-Thick-Black Harmonized tariff code 8542.3190	USB Vendor ID	0x24E0
Harmonized tariff code 8542.3190	USB Device ID	0x0040
	Suggested enclosure	YoctoBox-Short-Thick-Black
Made in Switzerland	Harmonized tariff code	8542.3190
	Made in	Switzerland

<sup>&</sup>lt;sup>‡</sup> The extended temperature range is defined based on components specifications and has been tested during a limited duration (1h). When using the device in harsh environments for a long period of time, we strongly advise to run extensive tests before going to production.





For more information: www.yoctopuce.com/EN/products/yocto-millivolt-rx