

**what is it?** microIOC-LOCO is a high-voltage splitter that can be connected between any commercial ion pump controller and up to 16 ion pumps. It measures current going through every pump from which pressure at the pump can be determined. If the measured pressure is outside the desired limits, interlocks can be triggered to avoid pump damage.

**who is it for?** microIOC-LOCO is an ideal solution to cut costs and rack space by at least a factor of 2 of vacuum systems where a large number of smaller pumps are used, such as storage rings and boosters.

microIOC-LOCOS are being used at ANKA, PTB, INFN-LNL and are being tested at ESRF.



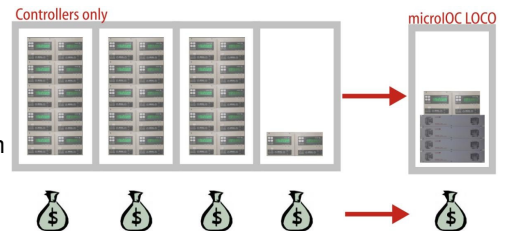
microIOC-LOCO is a standalone device which can be integrated into a control system using a microIOC-Cosylcon.

The following features are provided as standard: industrial-grade components; standard x86 architecture; dual Ethernet, 2xUSB, RS232, and VGA interfaces; complete SW support: Linux Debian or RTEMS, control system integration.

Please check microIOC baseline for the details of the microIOC family.

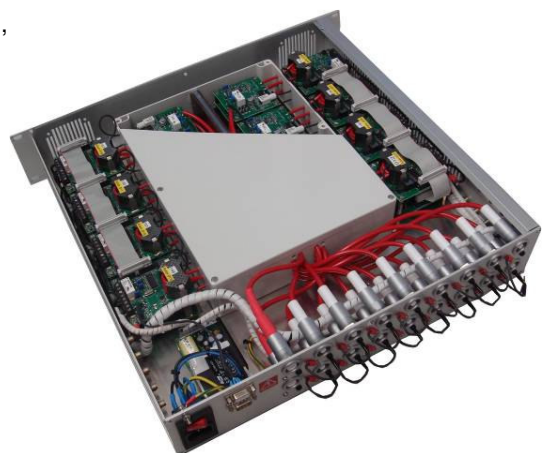
**benefits**

- ▣ Reduces cost and rack space: if one pump is connected per controller channel the price per pump is around 2000 EUR and 1U of rack space is used. Depending on the vacuum system these values can drop to 300 EUR and 0.2 U when LOCO is used.
- ▣ Pressure measurements at each pump allow problem pinpointing.
- ▣ Ion pump protection in case of poor vacuum.
- ▣ Interlock signal available to other systems.

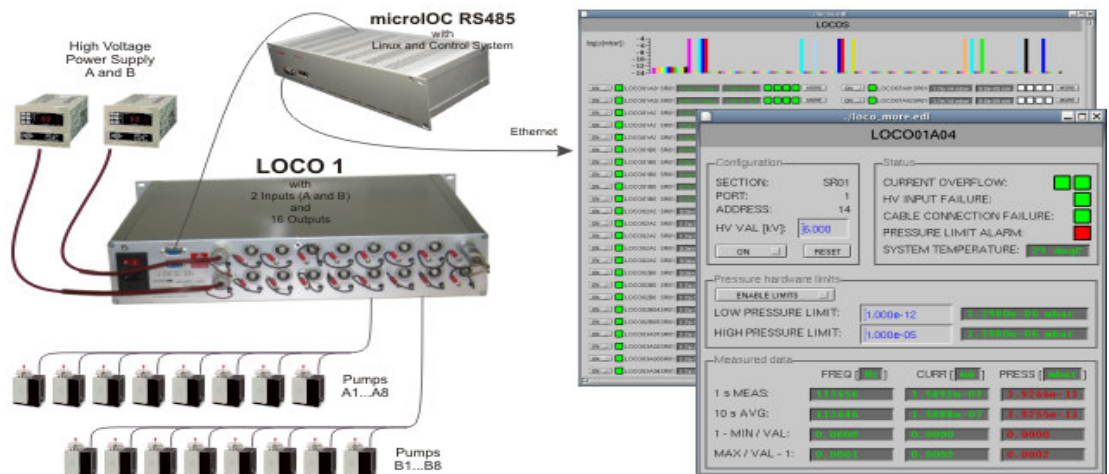


**key features**

- ▣ Plug&Play solution with EPICS support and EDM, WebCA and java GUI.
- ▣ Large pressure range:  $10^{-12}$  mbar to  $10^{-4}$  mbar.
- ▣ Measurement of 100 pA currents at high 10 kV.
- ▣ Logarithmic-scale current measurement.
- ▣ Low power dissipation: two-stage current operating range.
- ▣ Supports positive and negative HV.
- ▣ Safety interlock feature for cable disconnection.
- ▣ Very fast double mode over-current protection against electrostatic discharges.
- ▣ RS485 serial communication.
- ▣ Several customization options.



**use case** Storage ring sector 3 has 12\*75 l/s and 8\*300 l/s ion pumps.  
Instead of using 10 Varian Dual Controllers, 2 Varian Dual Controllers and 2 10 channel LOCOs can be used, thus reducing the costs from 40 kEUR to 15 kEUR, and rack space from 20 U to 4 U.



By using LOCO 16 ion pumps can be connected to 2 power supplies. microIOC acts as an interface to the control system.

EDM GUI: overview screen for 120 pumps and detailed screen for control of a single pump

**technical specifications**

<b>microIOC LOCO</b>	
<b>high-voltage input for the pump controller (high-voltage power supply)</b>	
number of input channels	2, galvanic isolated to apply positive or negative voltage (1 on request)
voltage	±10,000 V max
current	2 x 500 mA max
input high-voltage connector	Fischer D105Z049 with interlock (other type on request)
<b>high-voltage outputs for the ion pumps</b>	
number of output channels	2x8 (1x16 or smaller number of channels available on request)
allowable output current	up to 500mA permanent on output channel
output high-voltage connector	Fischer D105A049 with interlock (other type on request)
<b>high-voltage output current measurement / channel</b>	
input-to-output voltage drop	14V max (Iout < 140mA) / 5V max (Iout > 140mA)
current measurement range	100pA – 10mA
normal range of operation	500mA
current measurement principle	1) logarithmic-scale conversion of current to frequency 2) frequency is measured and integrated over 1 and 10s interval (other intervals on request) 3) frequency values (both, averaged over 1 and 10s) are available on communication port 4) frequency to current calculation must be performed
current accuracy	guaranteed: ± 10%, typically: ± 5%
<b>communication</b>	
RS485	multi-drop, single wire, ASCII protocol
<b>case, mains supply, operating environment</b>	
dimensions of enclosure	19" 2U rack mountable enclosure (88 x 430 x 435mm)
weight	11.5 Kg (25.8 lbs)
mains supply	auto-range: 90-132 / 180-264 VAC, 47-63 Hz, 75 W max
environment	operating: 0...+40 °C, storing: -20...+60 °C, operating humidity: 10...90% (non condensing)

