

KiloPotentiostat

KiloPTC-05100EA-ZL200

High-power H2FC potentiostat
with zero-voltage load booster

Version 1.4
2019-01-30
Preliminary



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Quick summary

| | |
|----------------------------|------------------------|
| ❖ Potentiostat/Galvanostat | ± 5 V, ± 100 A |
| ❖ Current ranges | 1 mA .. 100 A |
| ❖ Impedance spectroscopy | 1 mHz .. 100 kHz |
| ❖ Load booster | 0..+5 V, 0..-200 A |
| ❖ Cooling | Air |

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is a new range of high-power fuel-cell potentiostats/galvanostats equipped with a high-current booster that helps to increase the current in the load mode. This system is primarily designed for use with high-power hydrogen fuel cells and short stacks capable of supplying hundreds of amperes or even more than one kiloampere.

Such high currents are possible with hydrogen fuel cells in only one quadrant, whereas the currents required in 4-quadrant measurements are much lower. This is why the system consists of 100 A complete potentiostat with impedance spectroscopy and zero-voltage load booster available from 200A up to 2kA.

Electrochemical Impedance Spectroscopy (EIS) measurement is possible with a full DC current of booster while the AC component is generated by the potentiostat. The maximum amplitude of the AC component depends on the frequency and impedance of the fuel cell.

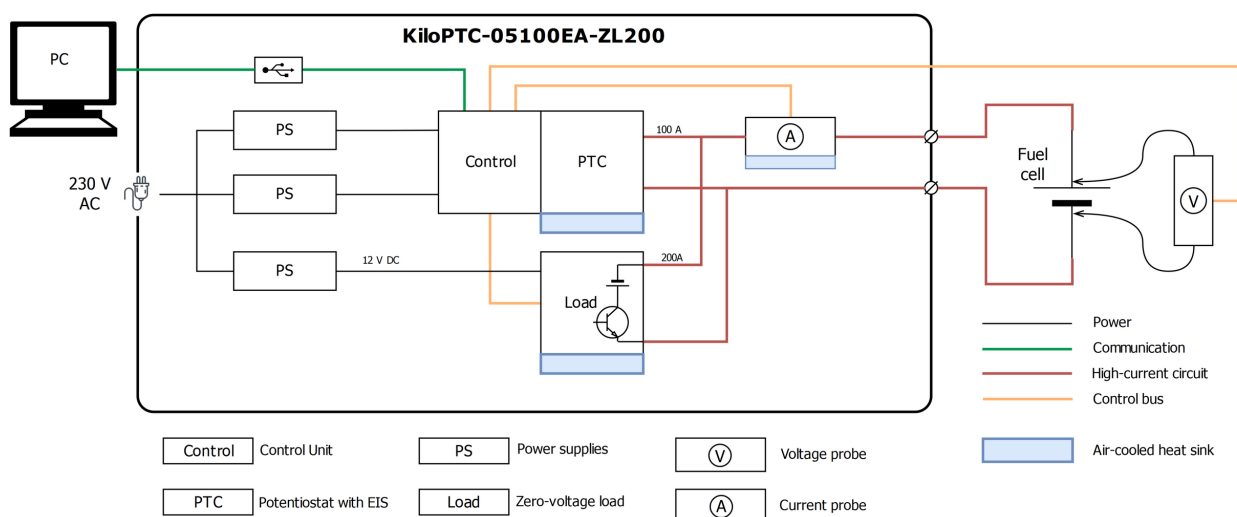


Image 1: Block diagram of KiloPTC-05100EA-ZL200 model

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Technical Parameters

| | |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply | 230V AC / 50..60 Hz |
| Dimensions | 19" rack cabinet, 6U height |
| Cooling | Air |
| Protection rating | IP20 |
| Electrometer Input voltage range | -10 V ... +10 V |
| Compliance / Output voltage | -5 V ... +5 V |
| Compliance / Output current | -100 A ... +100 A for output potential ± 1 V -50 A ... +50 A for output potential ± 5 V |
| Current ranges | 6 current ranges (1 mA .. 100 A) |
| Zero-voltage load booster | Sink up to 200 A from voltage 0..+5 V |
| Sampling | 24-bit ADCs, 3 ksps internal, 50 sps filtered sampling 14-bit ADCs, up to 20 Msps for EIS measurements |
| Measurement resolution | 0.001 % of selected range for ≤ 3 ksps sampling |
| Accuracy | Voltage ≤ 0.1 % of range + 0.1 % of reading Current ≤ 0.1 % of range + 0.5 % of reading |
| Acquisition methods | constant V, I, open circuit, manual control chronoamperometry, chronopotentiometry linear sweeps, I/V characteristics cyclic voltammetry pulse voltammetry - differential, square, normal impedance spectroscopy programmable sequences of all available methods |
| EIS frequency | 1 mHz .. 100 kHz |
| EIS amplitude | 1 .. 1000 mV, up to 100 A for < 1 kHz |
| Connection | USB 2.0 |