ELECTROCHEMICAL SOFTWARE

CPC is a comfortable program to manage and evaluate electrochemical measurements. It is based on Keithley Testpoint and runs under Microsoft Windows ™(V3.1 and Win 95/Win 98).

CPC controls potentiostats, records the data and displays data arrays. The data can be smoothed, or even changed. Straight lines can be fitted to evaluate slopes, using simple sliders to set the fitting limits. The potential axis can be scaled and rescaled referring to a variety of reference electrodes by simple button click. CPC performs potential vs. time, current vs. time, or current vs. potential curves. Moreover, you can use CPC for evaluation of data from other source files.
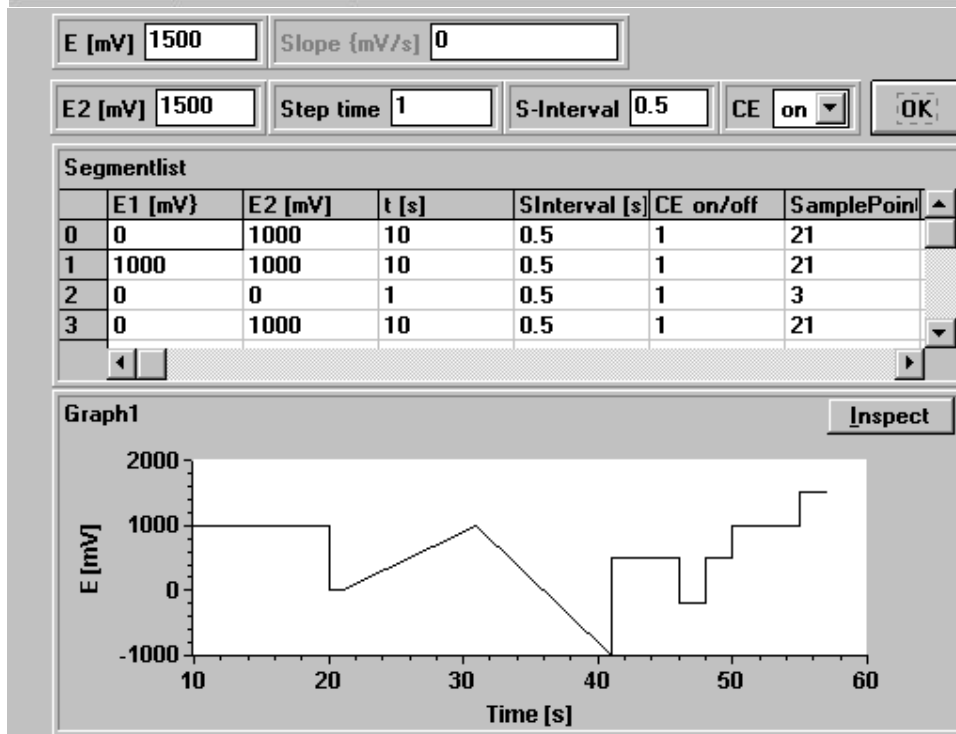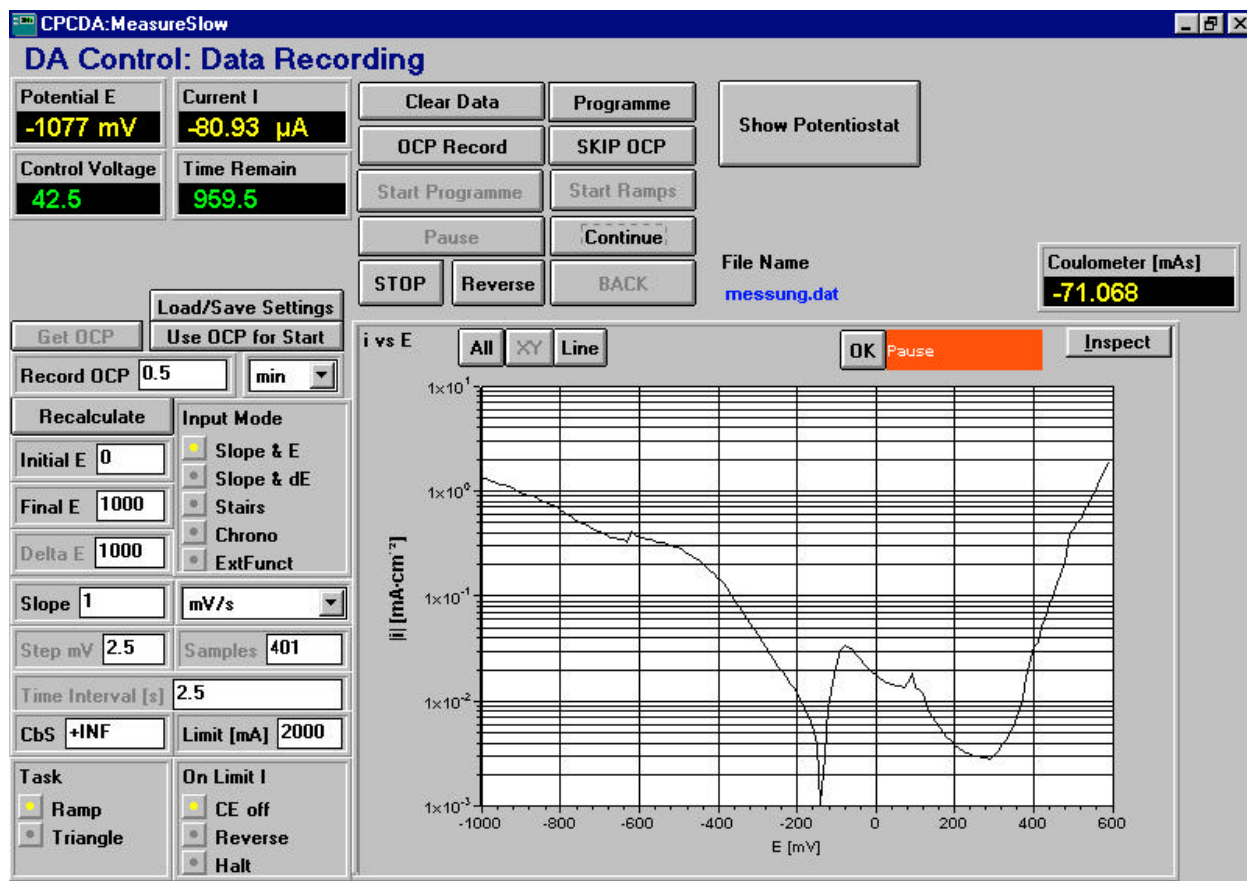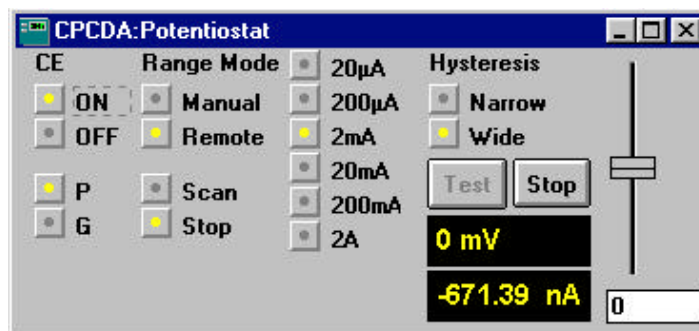

CPC provides secure documentation

If you want more information, please ask for the CPC demo disk (free of charge). CPC requires a PC 386 (or more advanced) running under DOS 6.xx, WIN 3.1, and at least 8 MB RAM and a SVGA graphics adapter.

Tasks supported by the CPC programme family:

- Chrono - potentiometry
- Chrono - Amperometry
- Linear Polarisation Curves
- Fast Cyclovoltametry (> 100 000 meas/s, can be extended to > 1 000 000 meas/s)
- Square functions

CPC can be adapted to your special requirements. You can change the programme using Keithley Testpoint ™. We supply Keithley Testpoint including all source codes used for CPC applications. See below: "Ring - Disc - control and more".

CPC does most jobs from ist basic measurement panel: Both static functions (like chrono - amperometry or chrono - potentiometry) and dynamic ramps or triangles can be set up here - with or without a preparation step including measurement of rest potential. Any setting can be stored and reloaded.

CPCDA:Potentiostat

CE	Range Mode		Hysteresis
● ON	● Manual	● 20µA	● Narrow
● OFF	● Remote	● 200µA	● Wide
		● 2mA	
● P	● Scan	● 20mA	Test Stop
● G	● Stop	● 200mA	**0 mV**
		● 2A	**-671.39 nA**

0

CPCDA:MeasureSlow

DA Control: Data Recording

Potential E	Current I
-1077 mV	-80.93 µA

Control Voltage	Time Remain
42.5	959.5

Clear Data | Programme
OCP Record | SKIP OCP
Start Programme | Start Ramps
Pause | Continue
STOP Reverse | BACK

Show Potentiostat

File Name
messung.dat

Coulometer [mAs]
-71.068

Load/Save Settings
Get OCP | Use OCP for Start
Record OCP 0.5 | min ▼
Recalculate | **Input Mode**
Initial E 0 | ● Slope & E
 | ● Slope & dE
Final E 1000 | ● Stairs
Delta E 1000 | ● Chrono
 | ● ExtFunct
Slope 1 | mV/s ▼
Step mV 2.5 | Samples 401
Time Interval [s] 2.5
CbS +INF | Limit [mA] 2000

Task | **On Limit I**
● Ramp | ● CE off
● Triangle | ● Reverse
 | ● Halt

i vs E All XY Line OK Pause Inspect

Quasi - manual operation is a MUST for experts - it is done by a simple click to the TEST button (see above).

Whereas simple functions can be set quick and convenient, complex functions can be programmed in a vast variety. If a Keithley KPCI 3116 is employed, any type of curve or pulse sequence can be programmed, up to a lenght of 4096 data points.

E [mV] 1500 | Slope {mV/s} 0
E2 [mV] 1500 | Step time 1 | S-Interval 0.5 | CE on ▼ | OK

Segmentlist

	E1 [mV}	E2 [mV]	t [s]	SInterval [s]	CE on/off	SamplePoin
0	0	1000	10	0.5	1	21
1	1000	1000	10	0.5	1	21
2	0	0	1	0.5	1	3
3	0	1000	10	0.5	1	21

Graph1 Inspect

NEW: Current - to - time integral in **real time.**

Recorded potentials, measured with a certain reference electrode, can be recalculated to other references.

Two different smoothing filters can be applied: Mean filtering for noise rejection, and median filtering for spike rejection.

Cursor - guided Tafel regions are fitted, Tafel slopes and corrosion currents are calculated from the Tafel lines. This practice has proven to be superior to any automatic Tafel line fitting, especially when the Tafel region is narrow.

Other helpful tools are: Integration of a selected part of the current - time curve whith respect to a selectable base line, search of minima and maxima within selected parts of the curve, or cross points with a selected curent level.

RING - DISC - CONTROL AND MORE

Using high - performance A/D - D/A converter boards, our systems POS 2 and RDP 98 are capable to do high - speed measurements both for ring - disc - electrode applications (RDP 98) or differential - potential - control applications (POS 2).

Additional Experiments supported by CPCKPCDA5f / Options for KPCI 3108 and other FIFO – Boards (optionally)

- Single pulse response, double pulse response
- Square wave voltammetry up to 4096 data points
- Pulse plating experiments

CONTROLLING THE RING - DISC - POTENTIOSTAT RDP 98

The RDP - extension CPCRDP is a special version of our CPCDA - electrochemical software. All practises done on a single working electrode now are extended to 2 working electrodes, including range setting, control mode setting and dynamic control voltage setting on both channels. Even more, fast dynamic controls enabling you to produce fast cyclic voltammetry, or even pulse - trains now are completely under pc control.

The graphics are extended to the needs of two independend working electrodes.

Hardware requirements:

- Personal computer Pentium (300 Mhz or above),
  32 MB RAM (128 MB for Windows 2000 or XP)
- Ring - Disc - Potentiostat RDP 97
- A/D - multifunction board Keithley KPCI 3116
- Control Interface PC-RDP (to be installed inside the RDP 98)
- Interface cable connecting the RDP to KPCI - board plugs

DIFFERENTIAL POTENTIAL CONTROL AND PERMEATION CELLS

For differential control experiments, as well as for permeation measurements, two potentiostats are required. Both shall be able to act completely independent. As long as only one potentiostat has to be controlled dynamically, whereas the other one is kept to constant potential (or constant current, respectively), the minimal configuration consists of 2 potentiostats, a KPCI 3102 A/D - interface and the interface cable. One potentiostat is controlled completely by the computer, the other one acts in the constant mode, it is not operated by software, but the data are read. This option is supported by the CPCDA version 4.0 or higher.

For advanced measurements when both potentiostats are to be controlled completely from the PC, it is recommended to use the RDP -extension of our software. Additionally required is the split - interface cable (DAScableX2) to connect the instruments.

Hardware Requirements:

- Personal computer Pentium (300 Mhz or above), at least 32
MB RAM memory (128 MB for Win2000 or XP)
- 2 potentiostats POS 2 with switch interface PC-G
- DAScableX2
- A/D interface KPCI 3102, or KPCI 3108 or KPCI 3116

Polarisation Resistance Measurements
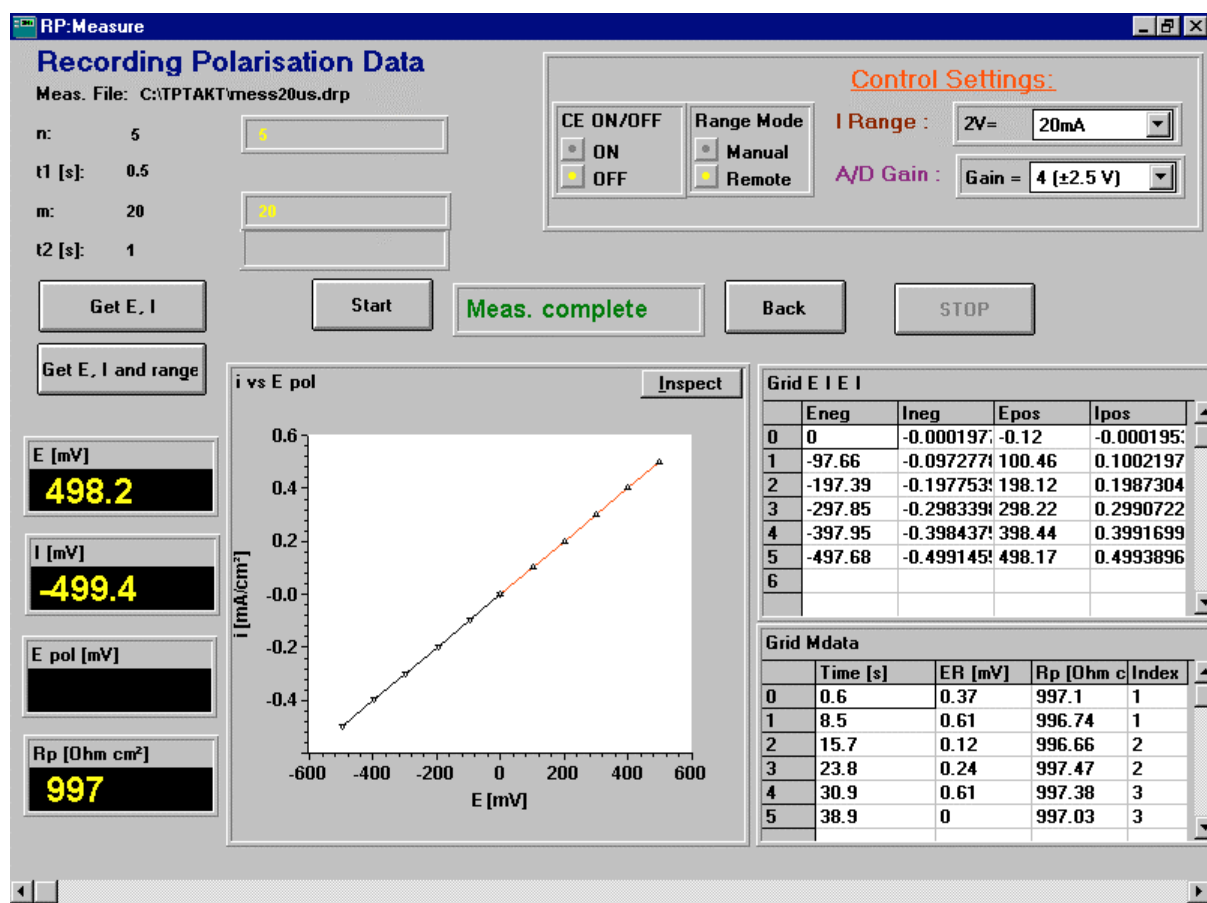
Polarisation resistance can be measured over extended periods using the software module RP. RP is a separate programme module included in our software package.

Please try our demo version of our CPC - DA module may be downloaded from our web side:

www.bank - ic.de

Note: The demo version does not allow all operations included in the non-demo version.