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PSE RMCS

is the remote monitoring and control system for cathodic corrosion protection station.

Remote monitoring and control?

...As if you would be on site and have everything under control!

Independent, how far you are away from the location of the cathodic protection stations, it is always ensured that your systems are monitored and controlled.

How does it work?

The remote monitoring and control technique enables the remote supervision of separated technical systems with the help of the communication technology.

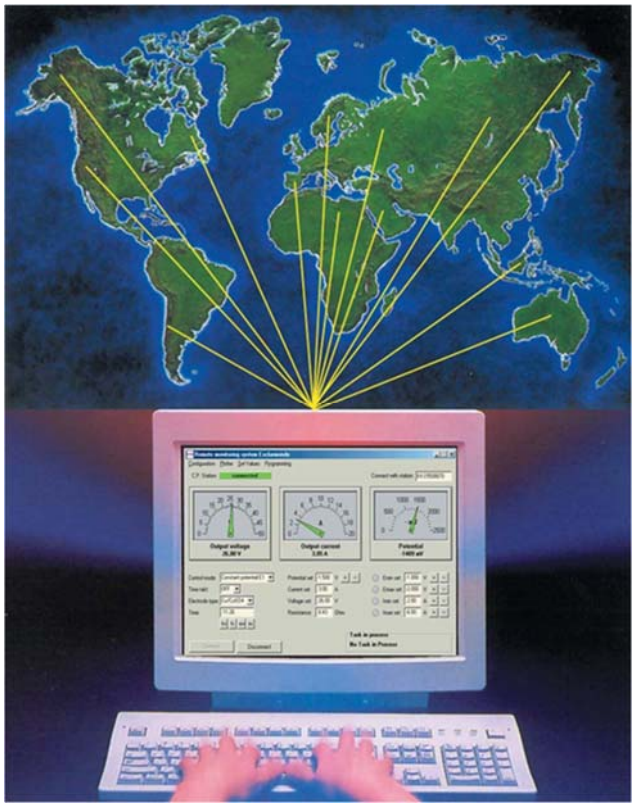
The fundamental functions of *PSE RMCS* can be subdivided into several subranges, like entering and alarming, switching, controlling and adjusting, as well as long-term archiving of all system relevant operational data of the connected cathodic protection stations.

When do you need PSE RMCS?

- If you want to reduce the operating cost
- If you want to achieve the perfect transparency of your systems
- If you want to reduce travel costs associated with traditional regular maintenance methods
- If you want to avoid consequential damages caused by ineffective cathodic protection stations

For the application in the cathodic protection technique

- Recording of measurements (current, voltage, potential)
- Monitoring of analog limiting values (e.g. potential)
- Logging and storage of events (status signals and fault signals)
- Digital and analog transmission of measured values to the central station
- Visualization of status and measured values online on monitor
- Online parametrization of cathodic protection stations
- Automatic and manual output of operating journal, routine fault signals, logging and diagrams on monitor and printer

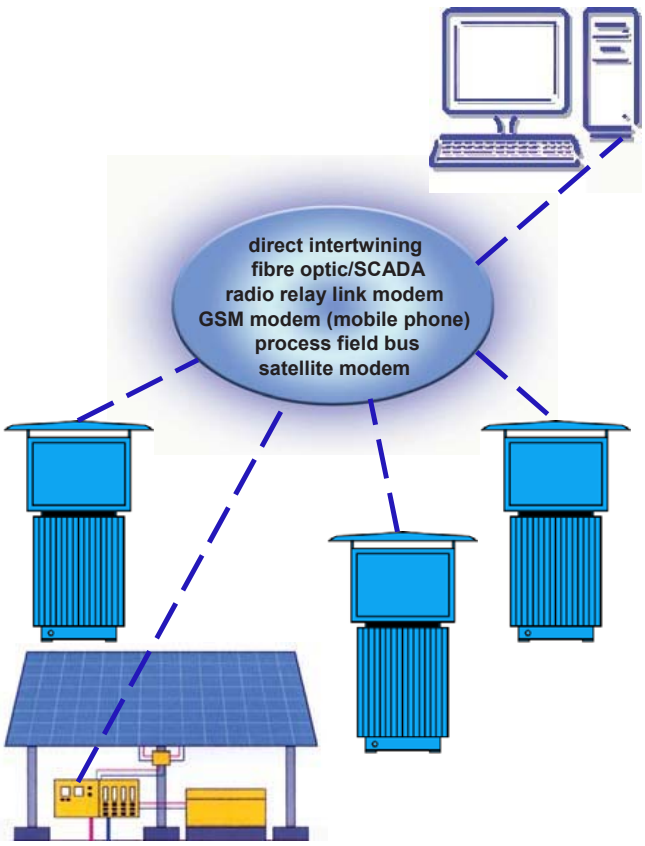


PSE RMCS essentially consists of two main components:

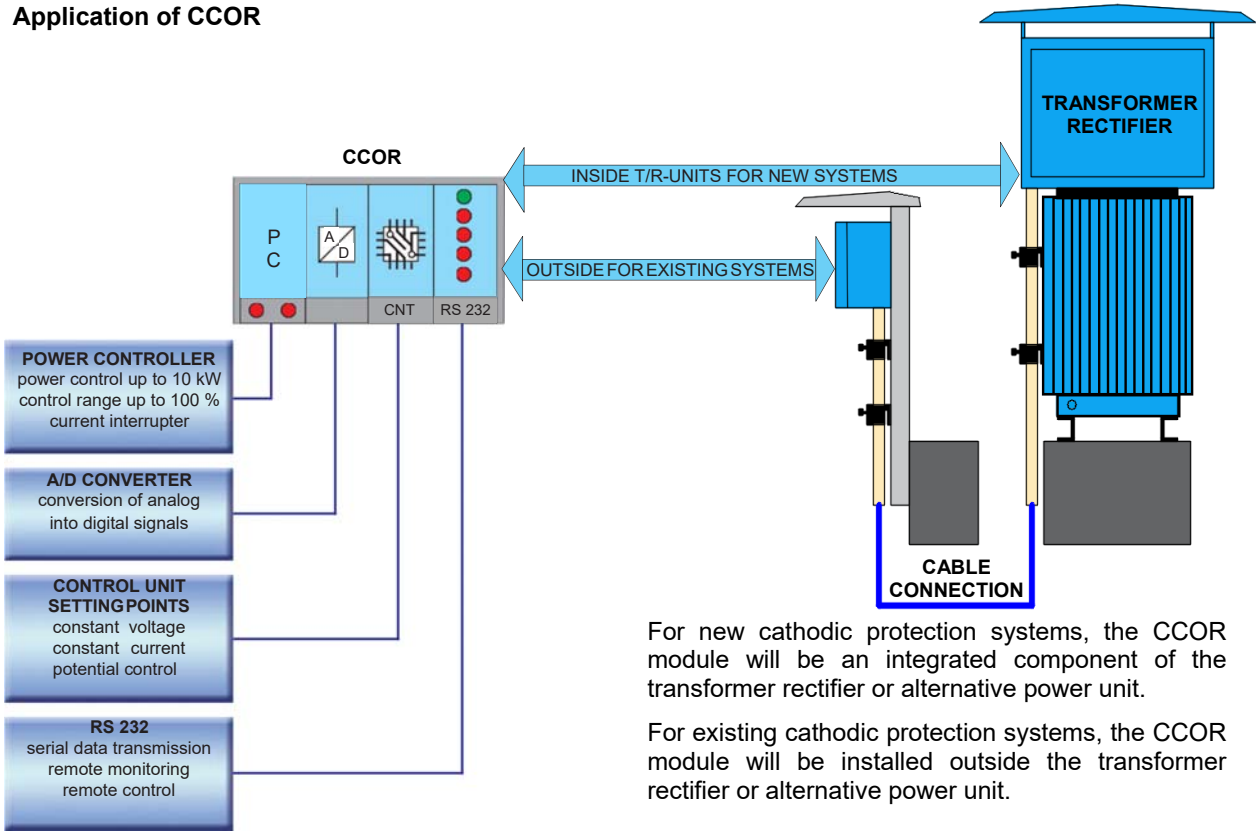
A control and monitoring unit, called **CCOR**, installed inside the transformer rectifier / alternative power unit or (in case of upgrading without enough space inside the cabinet) at the existing transformer rectifier / alternative power unit.

RMCS software package which monitor and control unlimited cathodic protection stations domestic or worldwide located (independent from borders or distances).

The connection between the two main components is made depending upon availability by direct wiring, fiber optic/ SCADA, radio relay link modem, dial line modem, GSM modem (mobile phone), process field bus (profibus, interbuss, canbus...), satellite connection or a combination of these media.



Application of CCOR



For new cathodic protection systems, the CCOR module will be an integrated component of the transformer rectifier or alternative power unit.

For existing cathodic protection systems, the CCOR module will be installed outside the transformer rectifier or alternative power unit.

General

CORROCONTROL OUTPUT REGULATOR (CCOR) is a control unit specially designed for the requirements of cathodic protection systems.
CCOR can be used in all different cathodic protection applications like pipeline protection, well casing protection, plant protection internal and external protection of tanks, protection of off-shore structures, protection of steel in concrete, etc.
The main task of CCOR is the monitoring and control of impressed current systems like transformer-rectifiers or DC/DC units.
CCOR could be operated as a standalone system with all parameters adjustable using push buttons and display on the controller, or via serial link from remote desktop computer.
Different CCOR units can be connected to one single central computer for a network in order to control every CCOR unit from one central monitoring and control station.

Basics

CCOR consists of a 19" slide in box with an operating panel at the front side and a terminal plug at the back side.
The CCOR can be used in applications where a new or existing power source for a cathodic protection impressed current system shall be monitored and controlled.
CCOR provides the possibility to control systems via control signal of 0-5 VDC or 0/4-20 mA current loop to adjust the output voltage of the power source. As an option CCOR provides the control of systems with a motor driven auto-transformer.
CCOR measures continuously the output voltage, output current as well as the potential of up to two (2) connected reference electrodes (Cu/$CuSO_4$, Ag/AgCl, Zinc or MnO_2).
The output voltage will be controlled respectively to the chosen control mode of either constant voltage, constant current or constant potential.
If two reference cells are connected to CCOR and the Electrode IS mode is chosen, the unit checks these cells concerning their accuracy. In case that the difference of reference cells exceeds a preset limit, the unit recognises this fault, indicates this fault and switches to a so called "Intrinsic Safe (IS) Mode", i.e. the control mode will be switched to a constant current mode as long as the failure has been fixed and acknowledged.
This would avoid an overprotection on some structures like coated steel off-shore structures or pre-stressed steel armour in concrete, where hydrogen embitterment could occur if the potential becomes too negative.

System Layout

There are different possibilities to connect the CCOR with the main power unit (e.g. transformer rectifier, DC/DC converter).

The CCOR could be installed inside of the same compartment as the main power unit or beside the main power unit.

Figure 1 and figure 2 show some typical connection schemes.

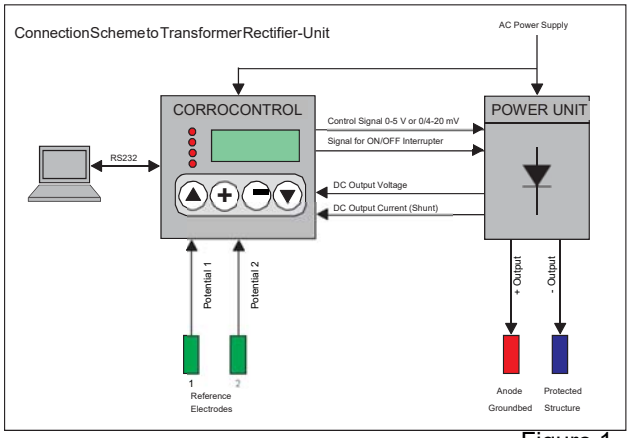


Figure 1

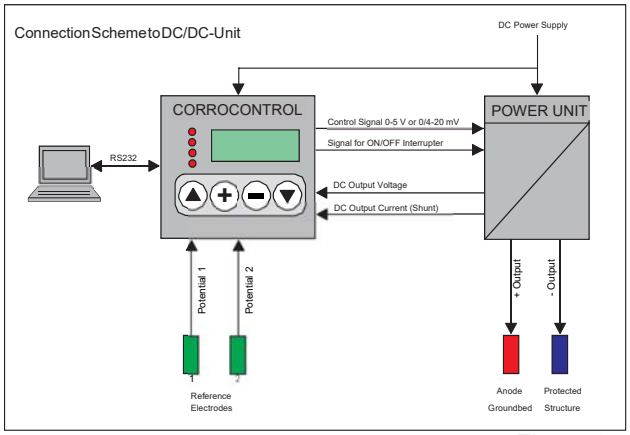


Figure 2

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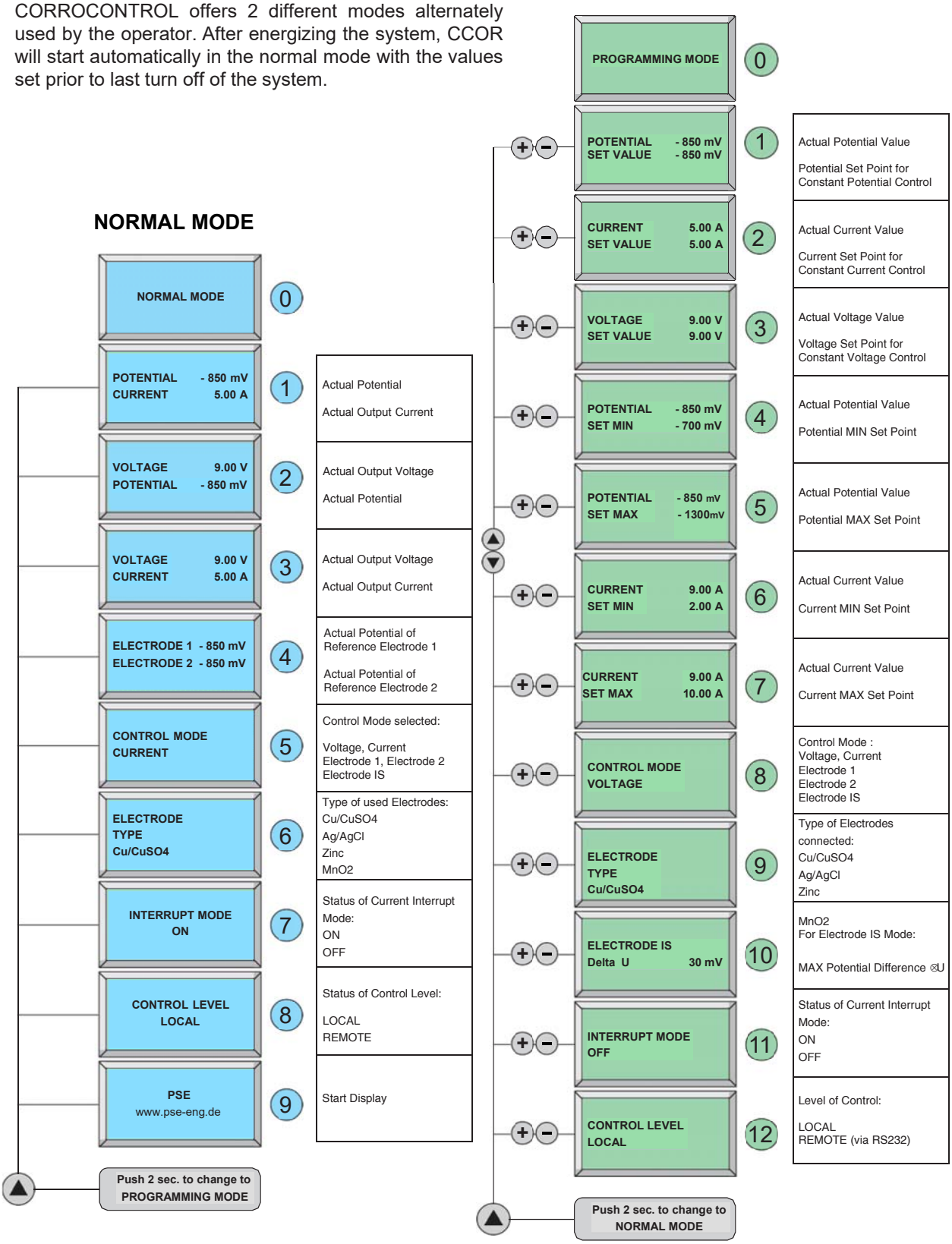
CORROCONTROL OUTPUT REGULATOR (CCOR)
Programming Procedure

CORROCONTROL offers 2 different modes alternately used by the operator. After energizing the system, CCOR will start automatically in the normal mode with the values set prior to last turn off of the system.

NORMAL MODE

PROGRAMMING MODE



Specifications

AC Input	115 - 230 V, 50/60 Hz
DC Input	12 - 48 V
Power	< 5.0 W
2 Potential Measurements (2 electrodes)	(-4 V) - (+4 V) DC, > 10 MΩ, potential free
Shunt Measurements	0 - 60 mV, 0 - 100 mV
Voltage Measurement	0 - 60 V
Output, Control Signal (Ust)	0 - 5 V DC
Output, Potential Meter	0 - 4 V DC
Relay contact for current interrupt mode	8 A
RS232 Baud Rate	9600 bit/s
RS232 Protocol	8N1
RS232 Handshake	None
RS232 (optional) Max. Cable length	15 m
LCD Display Characters	4 rows with 16 characters / LED
LCD Display Size of Character	approx. 5 mm
Dimensions	170 x 140 x 130 mm
Weight	approx. 0.90 kg
Operation Temperature	-10 °C to +50 °C

PSE RMCS Software Package

The RMCS software package allows the user to stay in contact with the CORROCONTROL units and to remote monitor as well as to remote control them from the main control room or from any place of the world by simply using a Laptop and a GSM mobile phone.

The RMCS software package is tailor made, which means the software is open to fulfil client requirements like:

- Language (e.g. English, Arabic, Chinese, German, Spanish, etc.)
- Visualization (main screen, detail screens)
- Database content
- Print Protocols
- User interfaces
- Special features (e.g. depolarization measurement)

Below some sample screenshots of the tailor made RMCS software package: