Cathodic Protection Power Supply unit with remote control Model CT37

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Performance

The unit can supply a current equal to the value indicated in the rating plate with a max output voltage adjustable from 0 to 50 V, to adapt the unit to the most different load conditions, maintaining a very high efficiency.

Load impedance can variate down to Ohm fractions.

Operation

The electric power needed for cathodic protection is drown from the electric 230 V_{AC} ± 10% net through an insulating transformer, meanwhile a switching device converts the AC Voltage to DC Voltage.
The switching device is managed by an electronic controller that has three different operating modalities available.

Operating modalities

The unit can operate in the following three ways:

1) CONSTANT CURRENT MODE:

By moving the central switch toward the "CURR" potentiometer (right), the latter is used to set the current value to be impressed to the system (structure-anodes groundbed).
The maintenance of the selected value is confirmed by the YELLOW "Constant Current" indicator LED (when the LED switches off, the controller is no longer able to maintain constant the current, having reached the maximum output voltage available).

In Constant Current mode the "BASE CURR" potentiometer must be set to zero (counter-clockwise).

2) CONSTANT POTENTIAL DIFFERENCE MODE:

When the central switch is oriented towards the "D.P." potentiometer (left), it is possible to set the value of the potential difference (between the structure to be protected and ground) that must be held constant.
The lighting of the GREEN "Constant D.P." LED indicates this mode of operation (the eventual shutdown of the LED light indicates that the controller is no longer able to keep constant the D.P.).
In Constant D.P. mode, the "CURR" potentiometer remains enabled, allowing the operator to set the current value which must not be exceeded: in case the current demand exceeds this limit, the controller will switch automatically to Constant Current mode (YELLOW light) for the duration of the increased load.

The "BASE CURR" potentiometer must be set to zero (counter-clockwise).

3) CONSTANT POTENTIAL DIFFERENCE MODE with BASE CURRENT:

The "BASE CURR" potentiometer allows the base current value setting. The Base Current is the minimum current value that the power supply must guarantee when operating in Constant D.P. mode.
The lighting of the lower YELLOW "BASE CURRENT" LED indicates that the Base Current mode is on-service.

"Local-Remote" working modality

The CT37 unit, when connected via "RS485" connector to a remote control unit, can transmit the working data to a remote computer via GSM.

By moving the "LOCAL-REMOTE" switch to the "LOCAL" position, the data will still be transmitted to the remote computer but it will be possible to perform functional adjustments only by acting manually on the CT37 control panel.

Operating in LOCAL mode, the YELLOW "data" LED is on and it blinks off when transmitting data.

Once the desired settings have been made, the user can memorize the new values by pressing the "STORE" biased switch. The "LOCAL-REMOTE" switch lever must then be reoriented to the "REMOTE" position.

Warning: if the "STORE" procedure is not executed, after one hour the new settings will be cleared and the unit will return in REMOTE mode to the previous values, thus allowing remote control. The same happens if REMOTE mode is restored without performing the "STORE" operation.

When the "LOCAL-REMOTE" switch is in the "REMOTE" position, parameters setting and operating modalities selection are possible only from the remote computer, which still continues to receive the operating values of the cathodic power supply.

During data transmission, the YELLOW "data" LED flashes.

The remote computer is equipped with a dedicated software, provided with interfaces for field data acquisition and command signals transmission for the power supply unit piloting.

In both operating modalities, LOCAL and REMOTE, if the YELLOW "data" indicator is off, there is no data exchange between the CT37 and the remote control unit.

Instruments

The unit is equipped with the most complete instrumentation that includes:

- Digital voltmeter for the potential difference reading;
- Digital voltmeter for the output voltage reading;
- Digital ammeter with output shunt 60 mV, full scale on terminals;
- The GREEN "OUTPUT" warning led lighting indicates that the unit is on-service.

Protections

The unit is equipped with automatic bipolar magneto-thermic switch on the 230 Vac ± 10% side and with automatic delayed single pole magneto-thermic switch on the DC output side.

Both input and output power are adequately protected against over voltage (by atmospheric origin) by means of solid state varistors.

The maximum output Voltage (V_{OUT}) is 50 V_{DC}. The lighting of the upper RED "V_{OUT}" warning LED indicates that the maximum output voltage has been reached.

Timer

The Timer function is available in both LOCAL and REMOTE operating modalities.

By activating the Timer remotely via the central software, it is possible to synchronize the Timer with that of other insistent feeders on the same pipe.

Switching-on the mini-switch "TIMER", the unit is put on-service in the cyclic mode:

ON time = 57 seconds ab.
OFF time = 3 seconds ab.

The Timer activation status is shown by the flashing of the related RED warning LED.

Optionals

- 4-20 mA output interface for remote monitoring of:
  Potential Difference
  Current output
  Voltage output
- ON/OFF contact for remote monitoring of:
  Failure Alarm
  Power line lack alarm
  Magneto-thermic output switch alarm

Technical data

Max continuous output Current (depending on version)	5 - 10 - 15 - 20 - 25 A
Input Voltage	190 / 253 V 50 / 60 Hz
Max output Voltage	50 V
Max Ripple Voltage	0.1 V_{eff}
Minimum output impedance	0.2 Ω
Dynamic P.D. shift	± 10 mV
Static P.D. shift	± 1 mV
Current regulation (at steady state)	± 100 mA
Dimensions (19" x 6U)	440 x 320 x h 270 mm
Weight	14.3 Kg.

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