CATHODIC PROTECTION RECTIFIERS

PRODUCT CATALOGUE 2026

- air-cooled
- oil-cooled
- accessories
- on-line monitoring system

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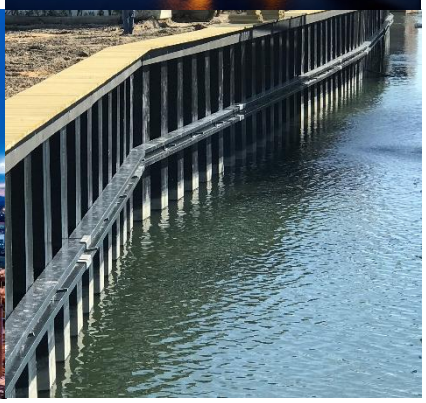
DESCRIPTION

Cathodic protection (CP) is a technique used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell. A simple method of protection connects protected metal to a more easily corroded "sacrificial metal" to act as the anode. The sacrificial metal then corrodes instead of the protected metal. For structures such as long pipelines, where passive galvanic cathodic protection is not adequate, an external DC electrical power source is used to provide current.

PROTECTED OBJECTS

- buried pipelines (oil, gas, water etc.) and pipe networks
- storage tanks
- plant areas – refineries
- underground metal installations
- offshore structures
- gas and oil wells
- reinforced concrete structures
- wind turbines in the sea



1. AIR-COOLED CP RECTIFIERS

Cathodic protection rectifiers are AC-powered electrical equipment that provides direct current for impressed current cathodic protection systems. They are designed as switching power supplies. Rectifier units are equipped with a variety of features, including automatic output adjustment, various types of electrical enclosures, remote monitoring, remote output adjustment, one or three phase AC input. Rectifier units are made-to-order and tailored specifically for your project requirements.

Main advantages (switching technology):

- used pulse-width regulation ensures high efficiency of switching power supplies in wide range of input voltage
- power supply output is short circuit proof and galvanic separated from input
- efficiency over 90 % in nominal operating point
- power factor of first harmonic ≥ 0,96
- high switching frequency of power supplies
- available for the all of electrode types

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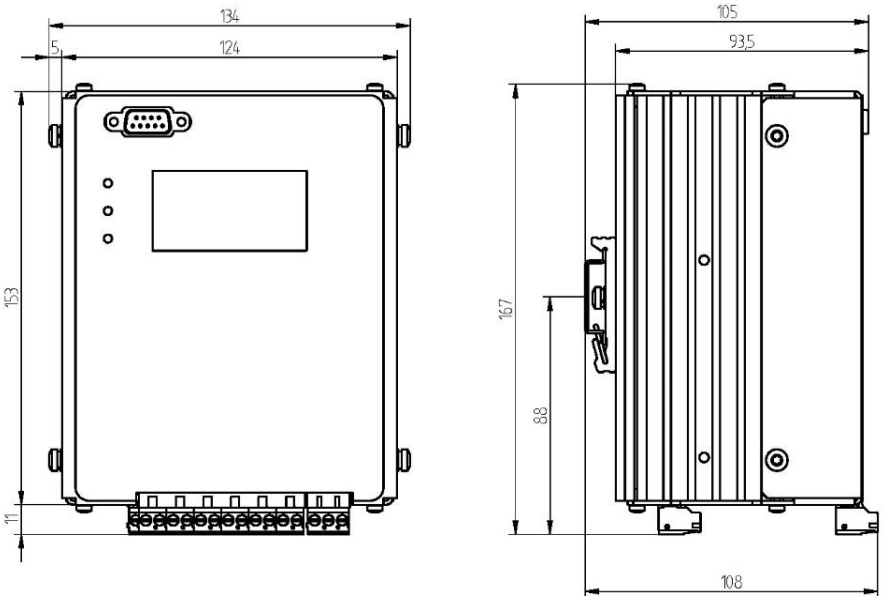
1.1 SERIES M71 (WITH OUTPUT POWER UP TO 75W)

FEATURES – TECHNICAL DATA

- output voltage: according to order code
- output current: according to order code
- input voltage: 1 N PE ~ 230V TN-S
- input voltage range: -15% to +15 %
- input frequency: 50 – 60 Hz
- setting of polarization voltage: 0 ÷ 5 V ±1%
- nominal insulation voltage: 500V
- insulation strength input - output: 4 kV AC
- control panel with OLED display
- measuring and displaying of output voltage, current and potential
- manual and automatic operation; automatic operating modes:
  - constant potential, constant voltage, constant current
- RS232 communication interface (connector)
- RS485 communication interface (terminals)
- 2x voltage-free programmable relay contact
- internal (programmable ON/OFF timer) and external clocking
- ON/OFF clocking synchronized via GPS (option)
- DIN-rail mounting
- ingress protection: IP 20
- natural cooling



ORDER CODES

► SZK 3 24/230M71H2R2	output 3A / 24Vdc
► SZK 3 24/230M71H2R2 A1,5 B48	output 1,5A / 48Vdc
► SZK 3 24/230M71H2R2 A0,5 B12	output 0,5A / 12Vdc

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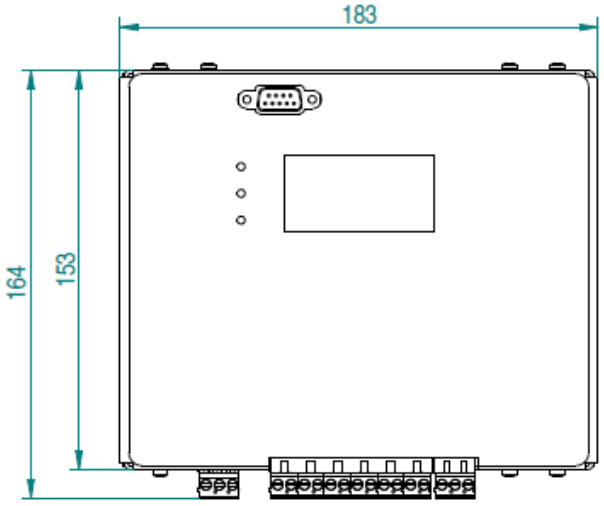
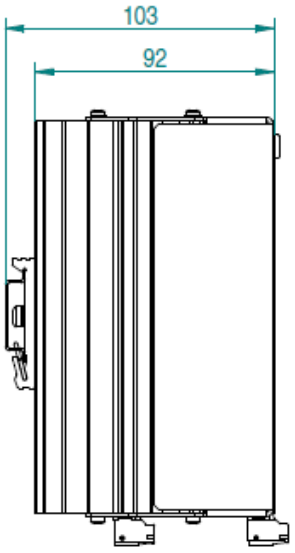
1.2 SERIES M71 (WITH OUTPUT POWER UP TO 250W)

FEATURES – TECHNICAL DATA

- output voltage: according to order code
- output current: according to order code
- input voltage: 1 N PE ~ 230V TN-S
- input voltage range: -15% to +15 %
- input frequency: 50 – 60 Hz
- setting of polarization voltage: 0 ÷ 5 V ±1%
- nominal insulation voltage: 500V
- insulation strength input - output: 4 kV AC
- control panel with OLED display
- measuring and displaying of output voltage, current and potential
- manual and automatic operation; automatic operating modes:
  - constant potential, constant voltage, constant current
- RS232 communication interface (connector)
- RS485 communication interface (terminals)
- 2x voltage-free programmable relay contact
- internal (programmable ON/OFF timer) and external clocking
- ON/OFF clocking synchronized via GPS (option)
- DIN-rail mounting
- ingress protection: IP 20
- natural cooling





ORDER CODES

SZK 10 24/230M71H2R2	output 10A / 24Vdc
SZK 10 24/230M71H2R2 A5 B48	output 5A / 48Vdc

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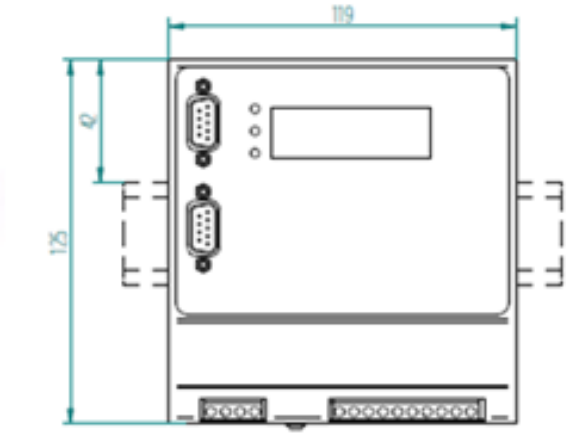
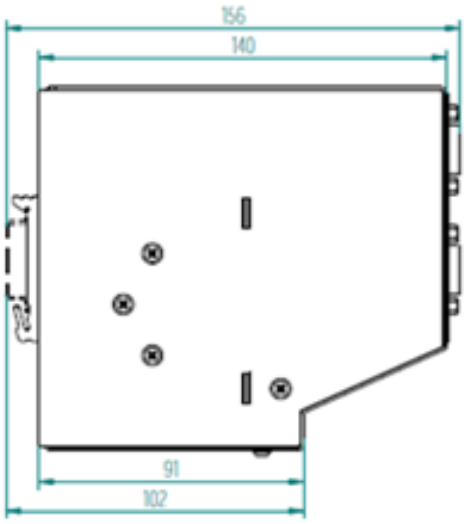
1.3 SERIES M53 (WITH OUTPUT POWER UP TO 250W)

FEATURES – TECHNICAL DATA

- output voltage: according to order code
- output current: according to order code
- input voltage: 1 N PE ~ 230V TN-S
- input voltage range: -25% to +15 %
  - version 500mA / 12Vdc: -15% to +15 %
- input frequency: 50 – 60 Hz
- setting of polarization voltage: 0 ÷ 5 V ±1%
- nominal insulation voltage: 500V
- insulation strength input - output: 4 kV AC
- control panel with LCD display
- measuring and displaying of output voltage, current and potential
- manual and automatic operation; automatic operating modes:
  - constant potential, constant voltage, constant current
- RS232 communication interface (connector)
- RS485 communication interface (connector)
- 2x voltage-free programmable relay contact
- internal (programmable ON/OFF timer) and external clocking
- ON/OFF clocking synchronized via GPS (option)
- DIN-rail mounting
- ingress protection: IP 20
- natural cooling





ORDER CODES

► SZKL 0,01 24/230M53H2R2*	output 10mA / 24Vdc	
► SZKL 0,3 24/230M53H2R2*	output 300mA / 24Vdc	
	** special type (linear) – eliminates the impacts of stray currents*	
► SZK 10 24/230M53H2R2 A0,5 B12	output 500mA / 12Vdc	on request, see new M71 version
► SZK 10 24/230M53H2R2	output 10A / 24Vdc	on request, see new M71 version
► SZK 10 24/230M53H2R2 A5 B48	output 5A / 48Vdc	on request, see new M71 version

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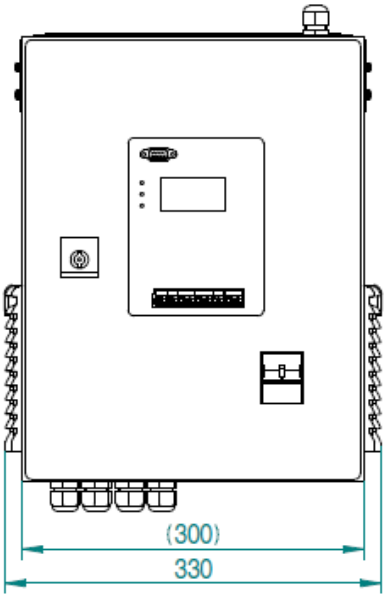
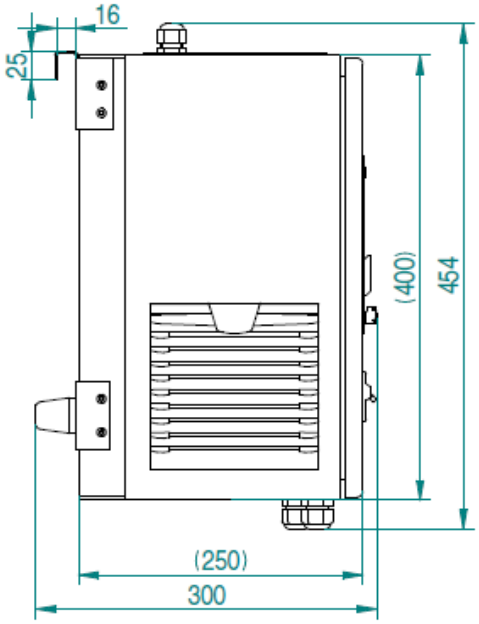
1.4 SERIES M71 (WITH OUTPUT POWER UP TO 1600W)

FEATURES – TECHNICAL DATA

- output voltage: according to order code
- output current: according to order code
- input voltage: 1 N PE ~ 230V TN-S
- input voltage range: -15% to +15 %
- input frequency: 50 – 60 Hz
- setting of polarization voltage: 0 ÷ 5 V ±1%
- nominal insulation voltage: 500V
- insulation strength input - output: 4 kV AC
- control panel with OLED display
- measuring and displaying of output voltage, current and potential
- manual and automatic operation; automatic operating modes:
  - constant potential, constant voltage, constant current
- RS232 communication interface (connector)
- RS485 communication interface (terminals)
- 2x voltage-free programmable relay contact
- internal (programmable ON/OFF timer) and external clocking
- ON/OFF clocking synchronized via GPS (option)
- wall mounting
- ingress protection: IP 20
- natural cooling





ORDER CODES

SZK 10 30/230.3M71H2R2	out 10A / 30Vdc	SZK 20 50/230.3M71H2R2	out 20A / 50Vdc
SZK 10 40/230.3M71H2R2	out 10A / 40Vdc	SZK 30 20/230.3M71H2R2	out 30A / 20Vdc
SZK 10 40/230.3M71H2R2 B50	out 10A / 50Vdc	SZK 30 30/230.3M71H2R2	out 30A / 30Vdc
SZK 20 40/230.3M71H2R2 A10 B65	out 10A / 65Vdc	SZK 40 40/230.3M71H2R2 B20	out 40A / 20Vdc
SZK 20 40/230.3M71H2R2	out 20A / 40Vdc	SZK 40 40/230.3M71H2R2	out 40A / 40Vdc

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1.5 SERIES M71 (CUSTOMER SOLUTIONS – SELECTED PRODUCTS)

ORDER CODES

- SZKS 30 60/230M71H2R2
- cathodic protection rectifier, output 30A/60Vdc, input 1x230Vac, regulation modes E/U/I, ON/OFF clocking, overvoltage protections, RS232, RS458 communication interface, 2x relay contact, OLED display, IP55, polyester cabinet

- SZK 35 70/400M.71KZ
- cathodic protection rectifier, output 35A/70Vdc, input 3x400Vac, regulation modes E/U/I, ON/OFF clocking, RS232, RS458 communication interface, 2x relay contact, OLED display, drainage diode, IP20, RITTAL cabinet

- SZK 50 50/400M71H2R2Z
- cathodic protection rectifier, output 50A/50Vdc, input 3x400-520Vac, regulation modes E/U/I, ON/OFF clocking, RS232, RS458 communication interface, 2x relay contact, OLED display, IP20, RITTAL cabinet

- SZKS 50 50/230M71H2R2Z
- cathodic protection rectifier, output 50A/50Vdc, input 1x230Vac; regulation modes E/U/I, ON/OFF clocking, RS232, RS458 communication interface, 2x relay contact, OLED display, kWh meter, IP20, RITTAL cabinet

- SZKS 100 20/230M71H2R2
- cathodic protection rectifier, output 100A/20V, input 1x230Vac, regulation modes E/U/I, ON/OFF clocking, overvoltage protections, RS232, RS458 communication interface, 2x relay contact, OLED display, IP20, RITTAL cabinet

- SZK 100 40/400M71H2R2
- cathodic protection rectifier, output 100A/40Vdc, input 3x400Vac, regulation modes E/U/I, ON/OFF clocking, RS232, RS458 communication interface, 2x relay contact, OLED display, IP20, RITTAL cabinet

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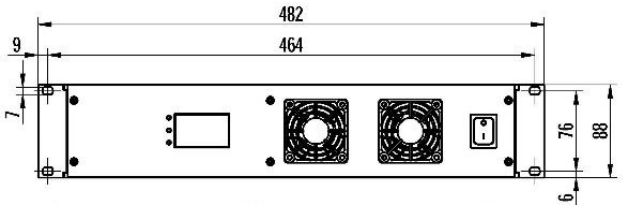
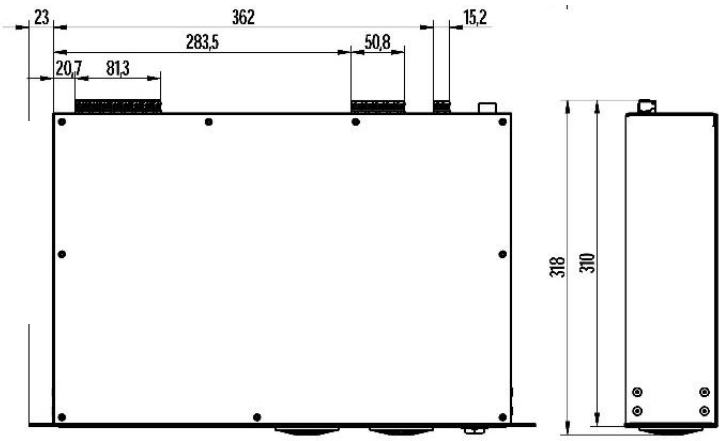
1.6 SERIES M2U (19" DESIGN, 2U)

FEATURES – TECHNICAL DATA

- output voltage: according to order code
- output current: according to order code
- input voltage: 1 N PE ~ 230V TN-S
- input voltage range: -15% to +15 %
- input frequency: 50 – 60 Hz
- setting of polarization voltage: 0 ÷ 5 V ±1%
- nominal insulation voltage: 500V
- insulation strength input - output: 4 kV AC
- control panel with LCD display
- measuring and displaying of output voltage, current and potential
- manual and automatic operation; automatic operating modes:
  - constant potential, constant voltage, constant current
- RS232 communication interface (terminals)
- 3x voltage-free programmable relay contact
- 2x analog output (0/4 - 20mA)
- internal (programmable ON/OFF timer) and external clocking
- ON/OFF clocking synchronized via GPS (option)
- ingress protection: IP 20
- CAB module (AC arrester) for filtering of industrial frequency sinus interference (only REZ1 models)





ORDER CODES

SZK 0,3 40/230M2U2-19RE	output 300mA / 40Vdc
SZK 3 40/230M2U2-19RE	output 3A / 40Vdc
SZK 10 40/230M2U2-19RE	output 10A / 40Vdc
SZK 0,3 40/230M2U2-19REZ1	output 300mA / 40Vdc, output for CAB
SZK 3 40/230M2U2-19REZ1	output 3A / 40Vdc, output for CAB
SZK 10 40/230M2U2-19REZ1	output 10A / 40Vdc, output for CAB
CAB 2U 120/50-3A v.2	capacitor bank, 120mF, 50Vac/50A, SZK 0,3-3A
CAB 2U 120/50-10A v.2	capacitor bank, 120mF, 50Vac/50A, SZK 10A

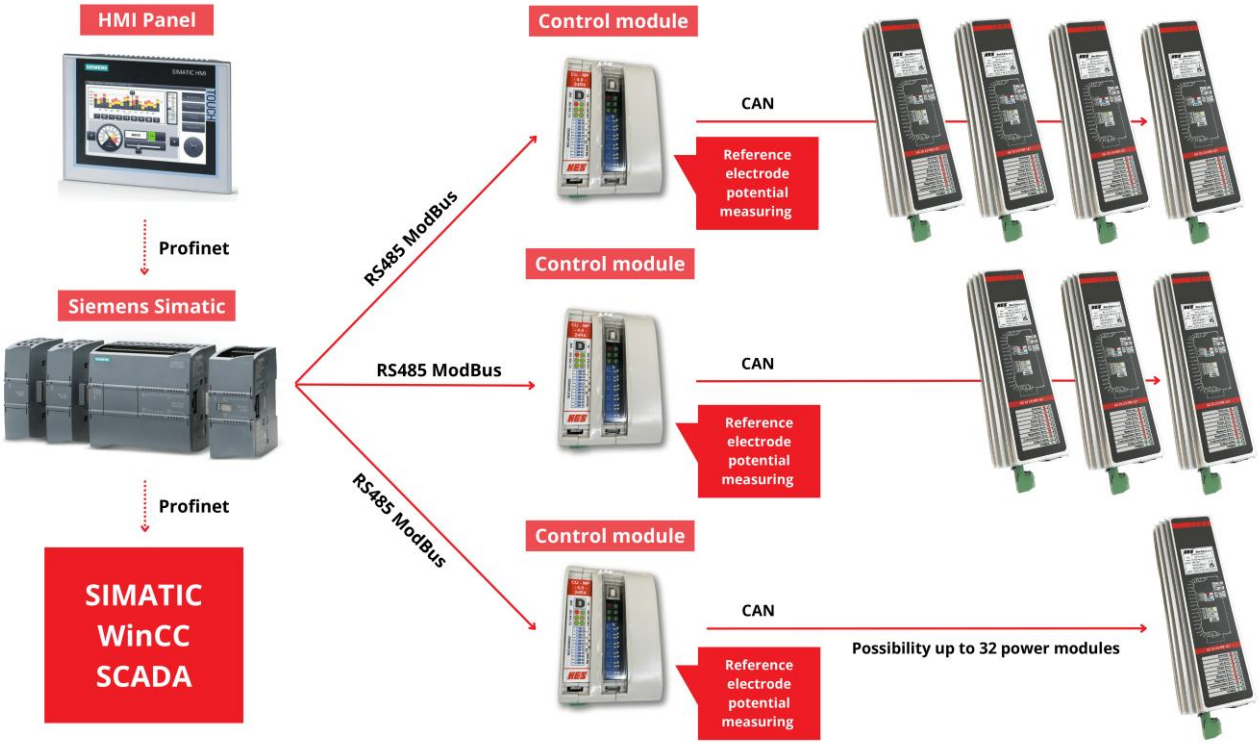
1.7 COMPLETE STATIONS

FEATURES – TECHNICAL DATA

- outdoor or indoor cabinet; aluminum, steel, stainless steel, plastic
- output voltage and current according to built-in cathodic rectifier
- input – measuring for probe
- input for ON/OFF clocking
- overvoltage protections for input, measuring and output
- service socket 10A, 230Vac (option)
- electrometer (option)
- module for remote communication module (option)

1.8 CUSTOMIZED SOLUTIONS

- modular system
- cathodic protection of reinforced concrete structures, tanks, wind turbines in the sea



2. OIL-COOLED CP RECTIFIERS

MAIN ADVANTAGES

- oil cooling, high ingress protection
- safety operation, reliability
- galvanic separated output from input
- high efficiency over 80 %
- no-load operation, short-circuit protection
- easy installation and operation
- available for the all of electrode types
- communication interface, PC connectivity
- sun shade (roof), oil breather, oil gauge, thermometer, drain valve with lockout, lifting lugs
- remote alarms - relay contacts (programmable)
- GPS synchronization (option)

FEATURES – TECHNICAL DATA

- operation modes: constant potential, constant voltage, constant current
- measuring and displaying of potential, output voltage and current
- designed for ambient temperature up to 58°C
- dimensions (W x H x D): 1126 x 1116 x 1715 mm
- weight: 300 kg w/o oil
- ingress protection IP 65
- outdoor enclosure

ORDER CODES

SZKO 50 50/400	output 50A / 50Vdc
other output parameters	on request
ATEX certification	on request

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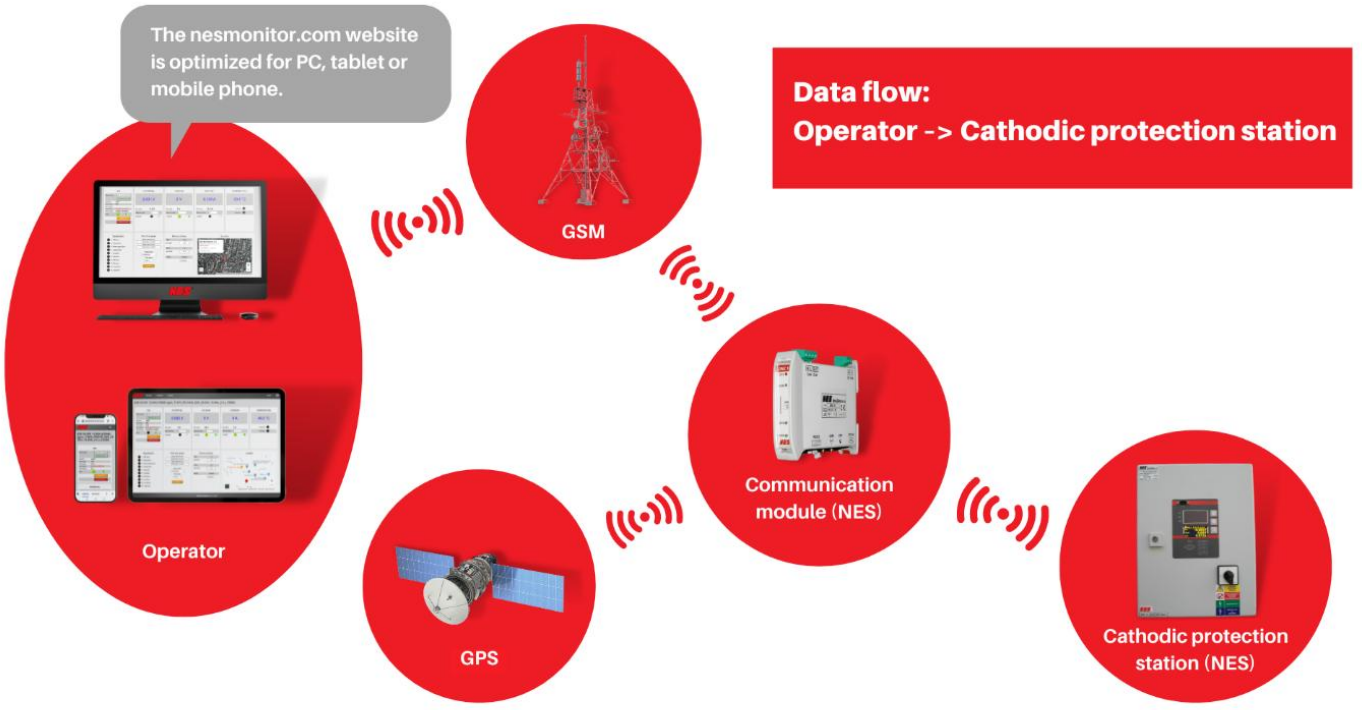
3. ON-LINE MONITORING AND CONTROL SYSTEM

3.1 WWW.NESMONITOR.COM

FEATURES – TECHNICAL DATA

- remote on-line monitoring and control system for NES rectifiers series M71, M81, M53, M2U, M1U, M91
- remote management of devices by means of GSM network where data transfer has to be enabled
- NESMONITOR consists of two devices in basic configuration – GSM modem and server where necessary data and information are stored
- access from PC, mobile, tablet
- server is used for gathering of necessary measured data and visualizes measured data
- various access rights to server
- safe data storage out of monitored device
- ability to set and monitor U, I and P remotely
- all assigned rectifiers seen by user directly on map; rectifiers assigned automatically
- ability to change and monitor selected mode of cathodic protection
- rectifier temperature monitoring
- monitoring of power-supply error reports
- ability to launch synchronous ON/OFF clocking of a group of rectifiers for one GSM modem with accuracy of 1ms
- graphic presentation of relationship between set and requested values
- ability to define position of end device (is being logged so protection against theft too)
- ability of sending a simple text message to end device; can be useful for operators who are working in near surround
- remote start or stop of rectifier possible



3.2 GPS SYNCHRONIZATION MODULE / GSM MODULE

FEATURES – TECHNICAL DATA

- GSM modem, which creates the connection between NES devices and HTTP protocol
- communicates through RS232/RS485/CAN interface, messages are transferred by TCP/IP protocol through HTTP
- supply voltage 12 - 32Vdc
- communication interfaces: RS232/RS485/CAN, GSM
- GPS for exact location and time
- terminals for external ON/OFF clocking
- external GSM and GPS antenna
- mounting on DIN rail
- modem setup through SMS or Bluetooth
- possibility of control and monitoring up to 5 rectifiers installed in 1 cabinet (kiosk) – use MX-RS232-1/5

ORDER CODES

- DMZ 40A (GPS synchronization module, 3G/4G GSM module, incl. antenna, connection RS232, DIN)
  ** data SIM card is not scope of delivery*

3.3 GPS SYNCHRONIZATION MODULE

FEATURES – TECHNICAL DATA

- GPS synchronization module, including antenna, connection to SZK via RS232

ORDER CODE

- GPS 01

3.4 RS232 COUPLER

FEATURES – TECHNICAL DATA

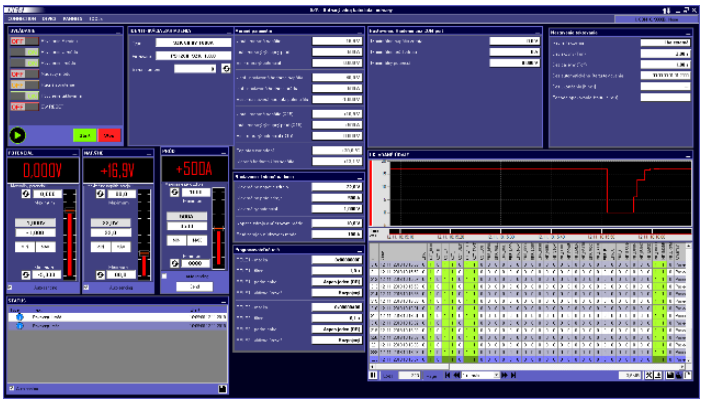
- RS232 coupler, 1x master, max. 5x slave
- DIN-rail installation
- possibility of control and monitoring up to 5 rectifiers installed in 1 cabinet (kiosk)

ORDER CODE

- MX-RS232-1/5

3.5 SETUP SOFTWARE

FEATURES – TECHNICAL DATA



- monitoring and setup software for SZK rectifiers
- possibility to setup and monitor only 1 rectifier via RS232 cable
- for connection to PC via USB - please use converter USB to RS232/485 v.1
- 1 license for 1 installation

ORDER CODE

- SW NEScontrol one

3.6 USB to RS232/485 CONVERTER

FEATURES – TECHNICAL DATA

- industrial converter
- USB interface
  - connector USB B
  - USB v2.0 Full Speed compatible
- RS232 interface
  - connector CAN 9 male
  - transfer speed 300 Baud up to 1 M Baud, 7/8 bit data, 1/2 stop bits, parity Odd, Even, Mark, Space, None
  - signaling of transferred data: TXD and RXD separately
- RS485 interface
  - connector CAN 9 female
  - transfer speed 300 Baud up to 250 k Baud, 7/8 bit data, 1/2 stop bits, parity Odd, Even, Mark, Space, None
  - signaling of transferred data: TXD and RXD separately
  - galvanic separation: 1600V rms
- power supply: via USB connector, 5V
- power consumption: max. 2W

ORDER CODE

- USB to RS232/485 v.1

3.7 FILTER – TRANSDUCER OF MEASURED POTENTIAL

FEATURES – TECHNICAL DATA

- transducer of measured potential
- ensures galvanic separation of measured potential with insulation strength 4kV
- includes the filter (band-rejection filter); balance can be set up by rotary switch on the front panel according to requirements of cathodic protection operation
- transducer converts the measured signal in the rate of 1:1 in range from -5V to +5V
- transducer requires the mains supply 230V AC, 50Hz
- output range: -5VDC ... +5VDC (35VAC, 100Vpp)
- input range: -5VDC ... +5VDC
- DIN rail mounting, dimensions 45 x 75 x 110 mm (WxHxD)

ORDER CODES

- SP 60C-16 (16 2/3 Hz)
- SP 60C-50 (50 Hz)

4. SPECIAL APPLICATIONS

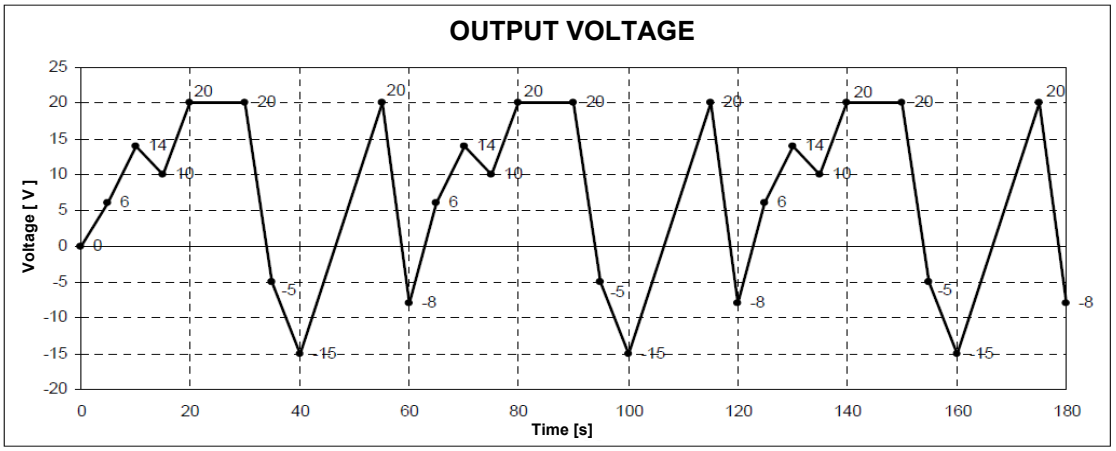
4.1 POWER SUPPLY FOR SIMULATION OF STRAY CURRENTS

FEATURES – TECHNICAL DATA

- microprocessor control, control panel with LCD display
- programmable
- output voltage 0 ÷ ±50V ±1%, output current max. 20 A ±1%
- continuous output power max. 1kW
- dimensions (W x H x D): 260 x 430 (475) x 300 (375) mm
- weight: 20 kg

ORDER CODE

- SZ 20 50/230 RZ output 20A, 50Vdc / input 1x230Vac

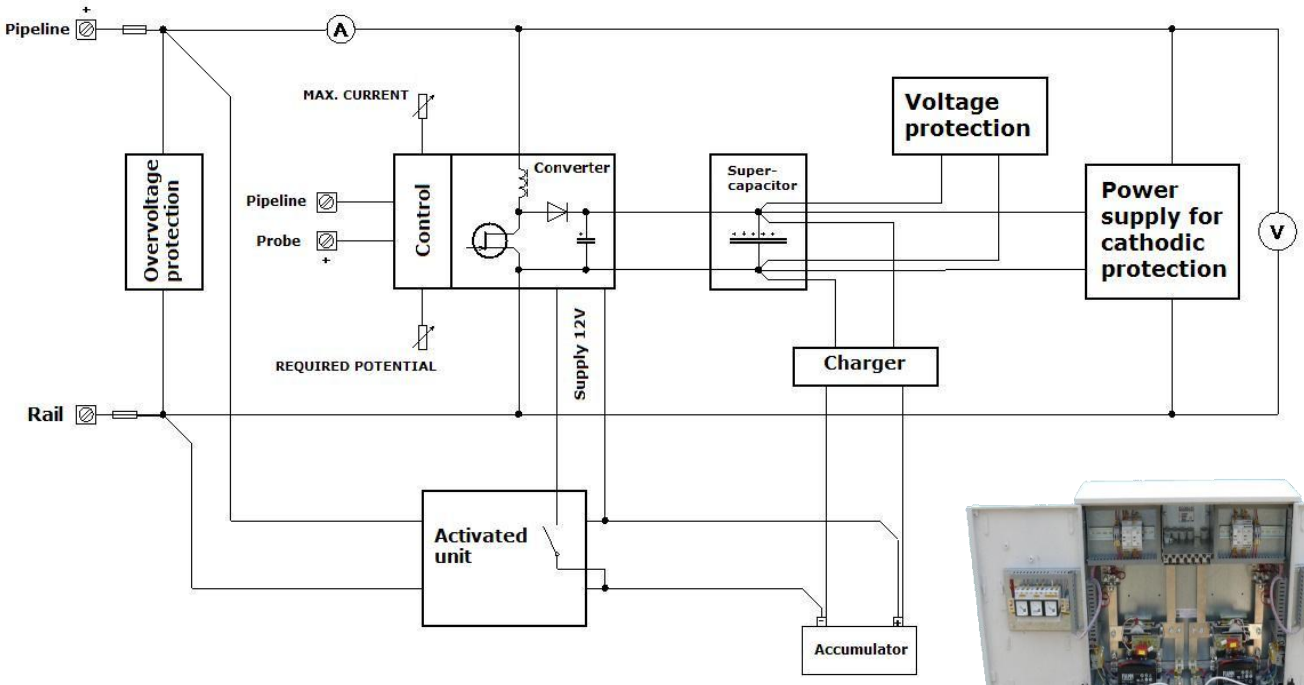


4.2 POLARISED ELECTRONIC DRAINAGES

Electric polarized controlled (EPD) drainage serves for passive, if cumulates the energy, then also for active protection of metal objects stored in ground or in water (water pipelines, gas pipelines, oil pipelines, or other pipelines), from the corrosion caused by changing wandering currents from DC traction or other sources. EPD is activated in the case of adverse polarity PIPELINE – RAIL and these will be connected by semiconductors switches. EPD monitors the soil status by potential probe and if the potential is better than its set value then the control begins to limit the current from pipeline to rail. EPD enables also to set the maximum drainage current regardless of other values. Supplying of device can be from mains, from stray currents, or from solar supply.

FEATURES – TECHNICAL DATA

- switching technology
- outdoor cabinet
- maximum voltage pipeline-rail: ±20V (tram traction), ±80V (railway traction)
- maximum current pipeline-rail: 100A/block (max. 2x400A)
- voltage overload capacity: max. 500V / 1sec by rate of voltage rise 50V/ms
- current overload capacity: max. 1500A / 1sec by rate of current rise 100A/ms



4.3 POLARISATION CELL REPLACEMENT

The polarization cell replacement (PCR) is a solid-state device designed to simultaneously provide DC decoupling and AC continuity/grounding when used with cathodically protected structures, such as pipelines, tanks, grounding systems, and cable casings. The PCR has very high AC fault current and lightning surge current ratings. With a higher blocking voltage than polarization cells, the PCR eliminates the need for placing devices in series, making it the most ideal isolation and grounding product for cathodically protected structures. In addition to out-performing polarization cells, the PCR also surpasses metal oxide varistors and gapped arresters, clamping lightning-caused over-voltages to the lowest possible levels.

FEATURES – TECHNICAL DATA

- surge forward current IFSM: 63kA, 55kA
- repetitive peak reverse voltages VRPM: 400V
- average forward current IFAV: 7100A / 1 diode
- dimensions (W x H x D): 214 x 300 x 183 mm
- ingress protection: IP65

ORDER CODE

- DOP X/X-63k-04
- DOP X/X-55k-04

NOTES

12.02.2026, Ce

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