

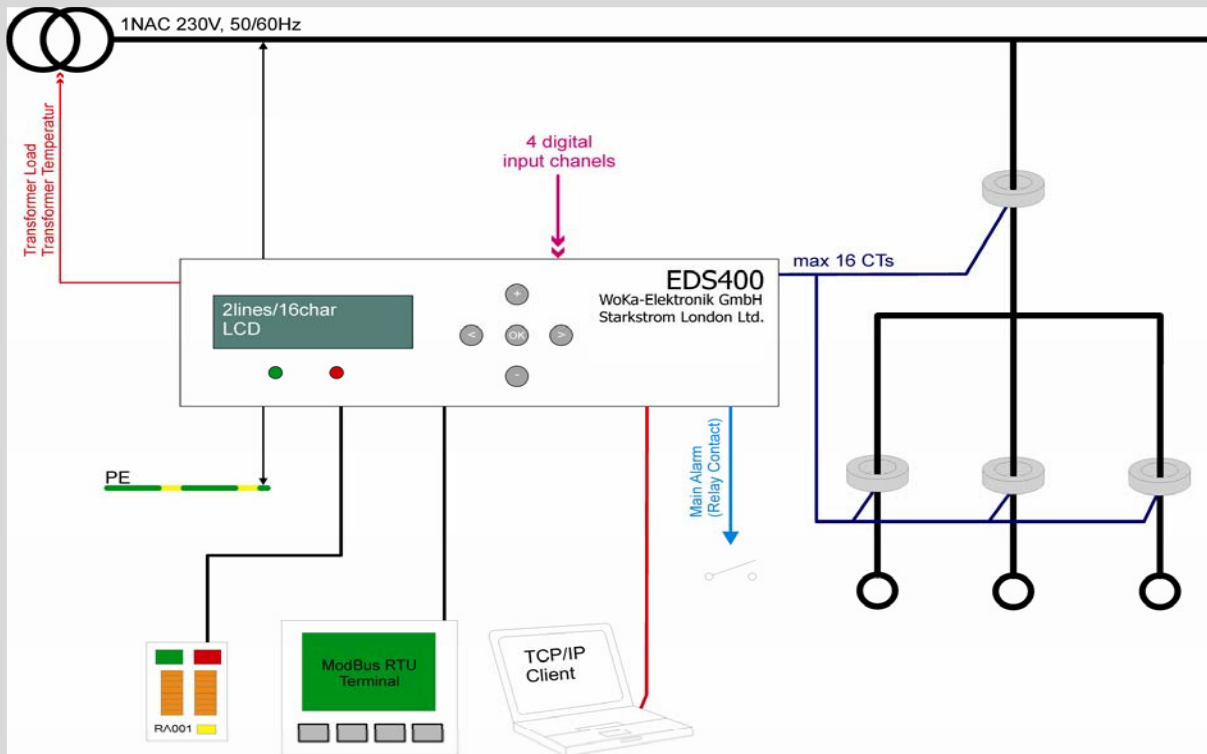


# STARKSTROM Ltd

## Earth Fault Detection System - EDS400

### Description

The medical electrical protection system EDS400 is specially designed for monitoring and locating earth faults in isolated power systems, according to IEC61557-8, IEC61557-9, IEC60364-7-710, MEIGaN 2.0 and HTM06-01. The system includes Insulation-Monitor, EDS and the capability to view power-network values and status-values of the connected isolated power-network with digital data communication.



The system is including the following main components:

- Insulation Monitor for detecting earth faults from line or neutral to earth
- Temperature & Transformer-Load Current Monitor
- Network-Parameter Monitor for getting line voltage and line power
- Search-Signal Generator for EDS process
- Measurement Circuits with the capability for connecting up to 16 Current Transformers (CTs)
- 4 channels for monitoring digital signals via relay or electronic contacts
- Communication Interface with ModBus RTU Protocol for transmitting measured values and network status.
- +/-12Volts DC-Power Supply
- Webserver with TCP/IP functionality, connected via standard network plugs
- Volt free changeover contact for RA006 clinical alarm and BMS
- Driver function to display isolation and transformer status on remote alarm units with the optional capability of a remote test function for special markets.



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## Earth Fault Detection System - EDS400

### General

Nominal ac isolation voltage ..... AC500V  
 Contact circuits..... AC250V  
 Insulation group to DIN VDE 0110 (01.89) ..... dirty group 3  
 AC Test Voltage  
   electronic - relay contacts..... AC3000V  
 Operation class..... continuous  
 Supply voltage Us ..... AC 230V  
 Relay contacts ..... one volt-free changeover  
   Switching capacity ..... 1100VA  
   Nominal contact voltage ..... 250V  
   Continuous current ..... 5A  
 Breaking capacity  
 at AC220V , cos.phi=0,4 ..... 3A

### Mechanical

Ambient temperature  
   Operation ..... -10°C .. +60°C  
   Storage ..... -40°C .. +80°C  
   Humidity classification to DIN 40 040 ..... F  
 Ingress protection to DIN 40 050 ..... IP30  
 Terminals to VBG4 ..... IP20  
 Mounting  
   Direction ..... equal  
   Rail Mounting..... DIN EN 60 715  
 Terminals  
   Type ..... plugable screw terminals  
   wire capacity ..... 0,5 .. 2,5mm<sup>2</sup>  
 Weight ..... ~500g  
 Dimensions..... 22,5mm x 115mm x 110mm

### Requirements on IT-Network

Nominal voltage ..... AC 230V (50/60Hz)  
 max line capacitance to earth ..... 0,5µF/Phase  
 max load current through CT ..... 100A  
 max differential current through CT ..... 70mA

### Insulation Monitor

Rated voltage for measuring circuit ..... AC250V  
 Measuring voltage..... DC15V  
 Measuring current..... max.65µA  
 DC internal resistance (Terminal L1,L2 to PE) ..... 240kΩ  
 Response value  
   Adjustable ..... 50kΩ .. 500kΩ  
   Hysteresis..... ca.20%

### Transformer Load-Monitor

Transformer ratio ..... 1:1000  
 Load..... ~30Ω  
 Adjustable response..... 5A .. 50A  
 Hysteresis ..... ca.20%

### Temperature-Monitor

Trip resistance R<sub>δ</sub> (Terminals Z1/Z2) ..... >3,5kΩ

### Remote Alarm Output

Transfer Mode..... special mode for RA001  
 Wiring  
   Type of cable..... screened, twisted pair  
   Max length ..... 1000m

### Search Current Generation

Measurement current  
   load-independent dc current..... ≤1mA  
   direction..... pulsing +/-  
 Impedance between line and earth  
   during search (minimum) ..... 50kΩ  
   maximal ..... >250kΩ  
   during pause ..... >10MΩ

### Measurement Circuits

max count of measurement circuits ..... 16  
 CT connection control ..... yes  
 tripping current ..... DC 0,4mA  
 measurement time (all circuits) ..... <120s  
 Length CT connection wire  
   twisted pair ..... < 1m  
   screened, twisted pair ..... > 1 - 10m  
   capacity ..... ≥0,5mm<sup>2</sup>

### Digital Inputs

Channels..... 4  
 configurable ..... NO/NC

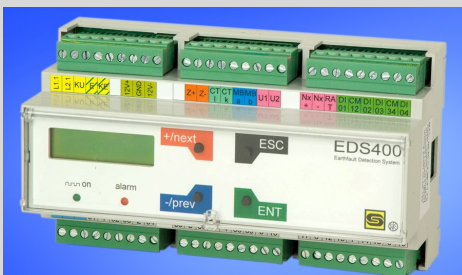
### Digital Communication

#### RS485 with ModBus RTU Protocol

Driver output ..... RS485, 2 wire  
 Data-bits ..... 8  
 Stop-bits..... 2  
 Parity ..... no  
 Protocol ..... ModBus-RTU  
 operation-mode..... Slave  
 Address-Range ..... 0..31

### Web Server

Physical Connection ..... 10BaseT Ethernet  
 Protocol ..... TCP/IP



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