

DPR-400

PROTECTION RELAY

DESCRIPTION

DPR-400 is a directional protection relay in standard panel dimensions. Thanks to its low depth, it provides space economy in panels. The large color screen allows simultaneous display of multiple measurements.

The DPR-400 features dual current measurement circuits. It is both a precise analyzer and a 50xIn protection relay.

Through RS-485 and ethernet comports, the unit is easily connected to Scada and automation systems. Parameter adjustment is done through the USB or ethernet ports.

The basic unit offers 4 digital inputs and 4 relay outputs. Additional 16 inputs and 16 relay outputs are optionally available.

PROTECTION CURVES

- IEC Standard / Very / Extreme Inverse
- UK Long Term Inverse
- IEEE Medium / Very / Extreme Inverse
- US Normal Inverse, Short Time Inverse

COMMUNICATIONS

- Ethernet 10/100Mbit
- USB 2.0 PC connection
- RS-485 (isolated) 2400-115200 baud
- IEC61850
- Modbus TCP/IP
- Modbus RTU
- IEC60870-5-103

RECORD MEMORY

- 100 x event records with 1ms time stamp
- 7 x oscillographic records (Comtrade format)
- Adjustable sampling rate (20..160 /cycle)
- Total 1MB record memory

ANALYSER MEASUREMENTS

- Phase voltages: V1-V2-V3-U12-U23-U31
- Phase currents: I1-I2-I3-Inötr-Ignd
- Active power: P1-P2-P3- Σ P
- Reactive power: Q1-Q2-Q3- Σ Q
- Frequency: F
- Positive sequence currents and voltages
- Negative sequence currents and voltages
- Zero sequence currents and voltages
- T32Q value



FEATURES

- **4.3" color graphic screen, 480x272 pixels**
- **Accurate power analyzer (Class 0.5%)**
- **4 quadrant energy counters**
- **Multiple protection curves**
- **Self test, internal failure monitoring**
- **Cold reclosure**
- **Configurable digital inputs**
- **Configurable relay outputs**
- **Load detecting relay outputs**
- **3 independent adjustment sets**
- **Multiple languages**
- **All parameters front panel adjustable**
- **3 level password protection**
- **Setup through USB, ethernet and RS-485**
- **Free PC program for setup**
- **16 x configurable front panel leds**
- **Manual & Scada driven closing and opening**
- **Firmware upgrade through USB**
- **IP65 protection (with optional gasket)**
- **Low panel depth, only 55mm**

STANDARDS

- EN60255 Electrical Relays
- EN61010 Safety Requirements
- EN61326 Electromagnetic Compatibility
- EN60068 Environmental Conditions
- EN60529 Protection Levels



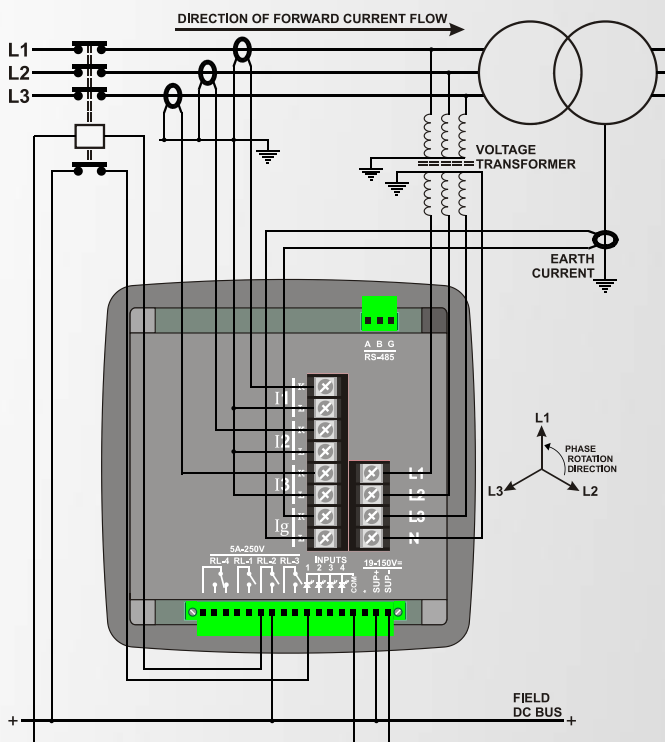
PROTECTION FUNCTIONS

ANSI COD	DESCRIPTION
27/27S	Under Voltage (Ph-Ph / Ph-N)
46	Negative Sequence Overcurrent
46BC	Broken Conductor
47	Negative Sequence Over Voltage
49RMS	Thermal Overload
50,51	Overcurrent
50N, 51N	Ground Overcurrent
50BF	Interrupter Failure
59	Over Voltage (Ph-Ph / Ph-N)
67	Directional Overcurrent
74	Circuit Connection Monitoring
79	Reclosure
81O	High Frequency
81U	Under Frequency
CLP	Cold Load Pickup

INPUTS AND OUTPUTS

- 3 x phase CT inputs (1A/5A)
- 1 x ground CT input (1A/5A)
- 4 x voltage inputs (57.7/100V)
- 20 x digital inputs (4 standard, 16 optional)
- 2 x circuit connection monitoring relay outputs
- 20 x relay outputs (4 standard, 16 optional)

INSTALLATION DIAGRAM



TECHNICAL SPECIFICATIONS

Supply Input: 19 - 150VDC

Power Consumption: < 10 VA

Nominal Frequency: 50/60 Hz

Phase CT Secondary: 1A/5A

Ground CT Secondary: 1A/5A

Protection Inputs:

Current: 0.1 – 250.0 A AC

Voltage: 5 - 100 V AC (P-N)

10 – 170 V AC (P-P)

Measurement Inputs:

Current: 0.01 – 6.0 A AC

Voltage: 5 - 100 V AC (P-N)

10 - 170 V AC (P-P)

Withstanding:

Current Inputs: 100 x In for 1 sec.

Voltage Inputs: 1300 V AC (continuous)

Loading:

Current Inputs: < 0.5 VA per phase

Voltage Inputs: < 0.02VA per phase

Analyzer Measurement Accuracy:

Voltage: % 0.5 + 1 digit

Current: % 0.5 + 1 digit

Frequency: % 0.2 + 1 digit

Power (kW,kVAr): %1.0 + 2 digit

Cos: % 0.5 + 1 digit

Measurement Range:

CT range: 5/5A to 30000/5A

VT range: 1.0/1 to 5000.0/1

kW range: 1.0 kW to 5000 MW

Relay Outputs: 5A @ 250V AC

Digital Inputs:

Active Level: 19 - 140V DC or AC

Min pulse: 100ms.

Isolation: 1000V AC, 1 minute

Ethernet Port:

Data Rate: 10/100Mbps

Protocols: IEC61850, Modbus TCP/IP

USB Port: USB Device, full speed (12Mbps)

Serial Port:

Signal type: RS-485

Protocol: Modbus RTU, 60870-5-103

Data Rate: 2400-115200baud, adjustable

Isolation: 500V AC, 1 minute

Operating Temperature: -20°C...+70 °C

Max. Relative Humidity: %90 non-condensing

Altitude: 2000m. max

Protection Degree:

IP 65 (Front Panel, with gasket)

IP 30 (Back panel)

Enclosure: Flame retardant, ROHS compliant, high temperature ABS/PC (UL94-V0)

Installation: Panel mount, rear retaining plastic brackets.

Dimensions: 164x164x69mm (WxHxD)

Panel Cutout: 140x140mm

Weight: 500 gr

EU Directives:

2014/35/EC (LVD)

2014/30/EC (EMC)

Ref. Standards:

EN 61010 (safety)

EN 61326 (EMC)