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

- 95x event records with 1ms time stamp
- 7 x oscillographic records (Comtrade format)
- Adjustable sampling rate
- 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-$\sum$P
- Reactive power: Q1-Q2-Q3-$\sum$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*
- *14 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
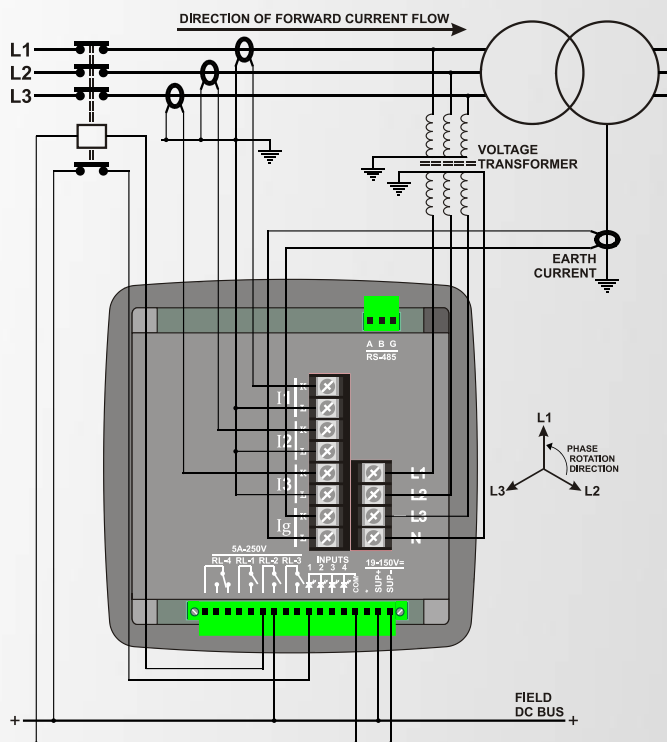- EN60529 Protection Levels

PROTECTION FUNCTIONS

ANSI CODE	DESCRIPTION
27	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	Breaker Failure
59	Over Voltage (Ph-Ph / Ph-N)
67	Directional Overcurrent
74CT	CT Supervision
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: 10/100Mbits
   Protocols: IEC61850, Modbus TCP/IP
USB Port: USB Device, full speed (12Mbits)
Serial Port:
   Signal type: RS-485
   Protocol: Modbus RTU, 60870-5-103
   Data Rate: 2400-115200baud, adjustable
   İsolation: 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:	Ref. Standards:
2014/35/EC (LVD)	EN 61010 (safety)
2014/30/EC (EMC)	EN 61326 (EMC)

DATAKOM