

# DPR-350

## NETWORK ANALYZER & PROTECTION RELAY

### DESCRIPTION

DPR-350 is a state of the art network analyzer and directional protection relay in 96x96mm standard panel dimensions. Thanks to its low depth, it provides space economy in panels. The large graphic screen allows simultaneous display of multiple measurements.

The DPR-350 features dual current measurement circuits. It is both a precise analyzer and a 25Amp protection relay. Protection curves are selected between various IEC, ANSI, UK and US types. Multiple curves may be enabled simultaneously.

Through RS-485 comport, the unit is easily connected to Scada and automation systems. Parameter adjustment is done through USB port.

The unit records all electrical parameters with adjustable period in its 1MB record memory (optional 16MB). Records are read through Modbus.

The unit offers 4 digital inputs, 3 analog outputs and 2 relay outputs. Analog outputs can give any measured parameter in 4-20mA format.

### PROTECTION CURVES

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

### COMMUNICATIONS

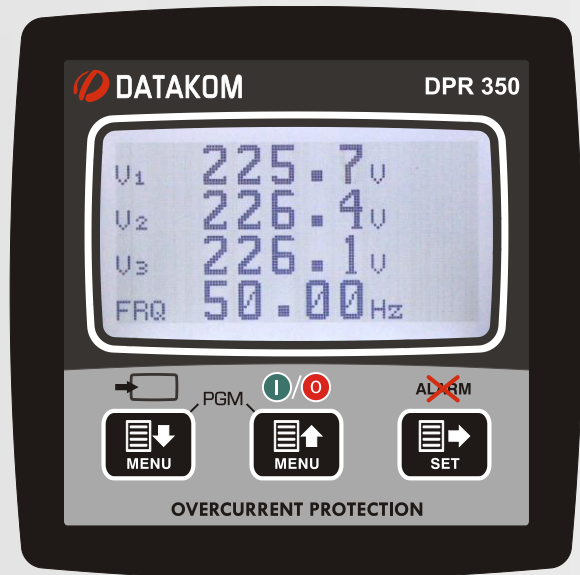
- USB 2.0 PC connection
- RS-485 (isolated) 2400-115200 baud
- Modbus RTU
- IEC60870-5-103

### RECORD MEMORY

- 35 x event records with time stamp
- 15.000 x periodic records with time stamp
- Adjustable record period
- Total 1MB record memory

### ANALYZER MEASUREMENTS

- Phase voltages: V1-V2-V3-U12-U23-U31
- Phase currents: I1-I2-I3-I<sub>n</sub>tr-I<sub>gnd</sub>
- Active power: P1-P2-P3- $\Sigma P$
- Reactive power: Q1-Q2-Q3- $\Sigma Q$
- Apparent power: S1-S2-S3- $\Sigma S$
- Power factor: cos1-cos2-cos3- $\Sigma \cos$
- Frequency: F
- Negative sequence currents and voltages
- Zero sequence currents and voltages
- T32Q value



### FEATURES

- 128x64 pixel graphic screen
- Accurate MV power analyzer (Class 0.5%)
- 4 quadrant energy counters
- Multiple protection curves
- 1MB record memory
- Self test, internal failure monitoring
- Cold reclosure
- Configurable digital inputs
- Configurable relay outputs
- Configurable analog outputs
- 2 independent adjustment sets
- Multiple languages
- All parameters front panel adjustable
- 3 level password protection
- Setup through USB and RS-485
- Free PC program for setup
- Manual & Scada closing and opening
- Firmware upgrade through USB
- Wide supply voltage range: 19-150VDC
- IP65 protection (with optional gasket)
- Low panel depth, only 53mm

### STANDARDS

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



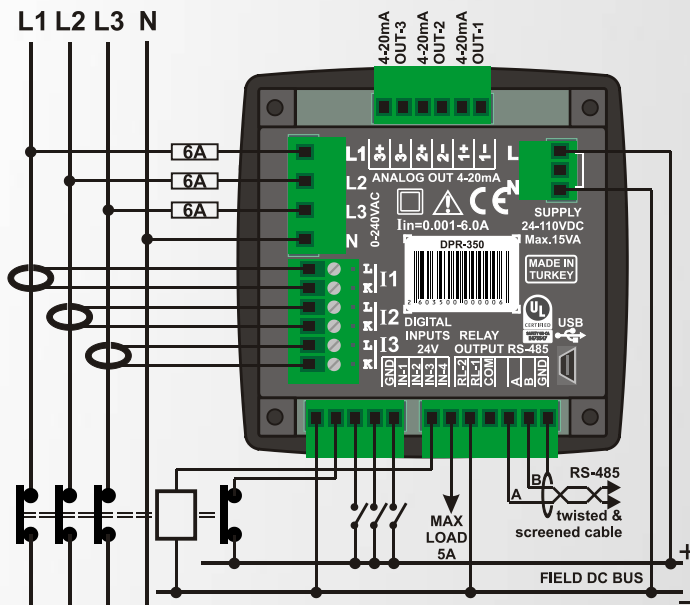
## PROTECTION FUNCTIONS

ANSI CODE	DESCRIPTION
50,51	Overcurrent
46	Negative sequence Overcurrent
67	Directional Overcurrent
50BF	Interrupter Failure
74	Circuit Connection Monitoring
79	Reclosure
94/69	MCB & Contactor Control

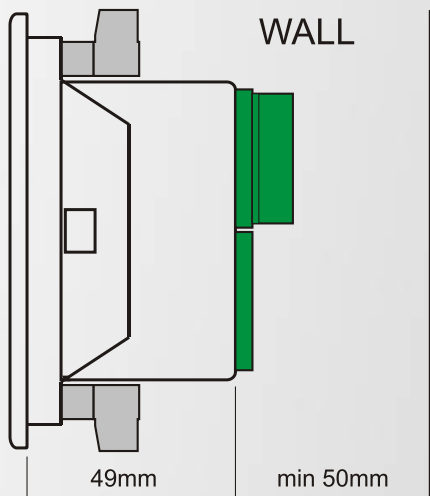
## INPUTS AND OUTPUTS

- 3 x phase CT inputs (1A/5A)
- 4 x voltage inputs (230/400V)
- 4 x optically isolated digital inputs
- 2 x relay outputs (5A / 250VAC)
- 3 x analog output (4-20mA)

## INSTALLATION DIAGRAM



## SIDE VIEW



## TECHNICAL SPECIFICATIONS

**Supply Input:** 19 - 150VDC

**Power Consumption:** < 4 W / 15VA

**Nominal Frequency:** 50/60 Hz

**Phase CT Secondary:** 1A/5A

**Protection Current Range:** 0.1 – 25.0 A AC

**Measurement Inputs:**

**Current:** 0.001 – 6.0 A AC

**Voltage:** 7 - 300 V AC (Ph-N)

14 - 520 V AC (Ph-Ph)

**Analog outputs:** active, 4-20mA

**Output Accuracy:** 16 bits

**Withstanding:**

**Current Inputs:** 100 A AC for 1sec.

**Voltage Inputs:** 1300 V AC (continuous)

**Loading:**

**Voltage Inputs:** < 0.02VA per phase

**Current Inputs:** < 0.5 VA 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 25000/5A

**VT range:** 1.0/1 to 5000.0/1

**kW range:** 1.0 kW to 5000 MW

**Relay Outputs:** 5A (250VAC / 30VDC)

**Digital Inputs:**

**Active level:** 19 - 140V DC or AC

**Min pulse:** 100ms.

**Isolation:** 1000V AC, 1 dakika

**USB Port:** USB Device, full speed (12Mbit)

**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 to +70 °C

**Max. Relative Humidity:** %95 non-condensing

**Altitude:** 2000metres 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:** 102x102x53mm (WxHxD)

**Panel Cutout:** 92x92mm

**Weight:** 200 gr

**EU Directives:**

2006/95/EC (LVD)

2004/108/EC (EMC)

**Ref. Standards:**

EN 61010 (safety)

EN 61326 (EMC)

**UL-CSA Certification:**

UL 61010-1, 3rd Edition, 2012-05,

CAN/CSA-C22.2

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