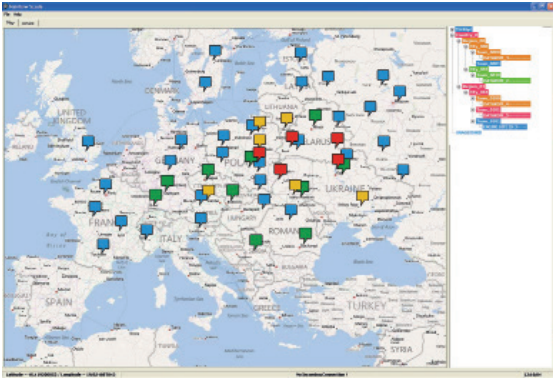


Remote Monitoring & Control

RAINBOW SCADA

Rainbow Scada is an internet based universal remote monitoring and control program, flexible enough to integrate all kinds of intelligent control modules, independently of the manufacturer and function.

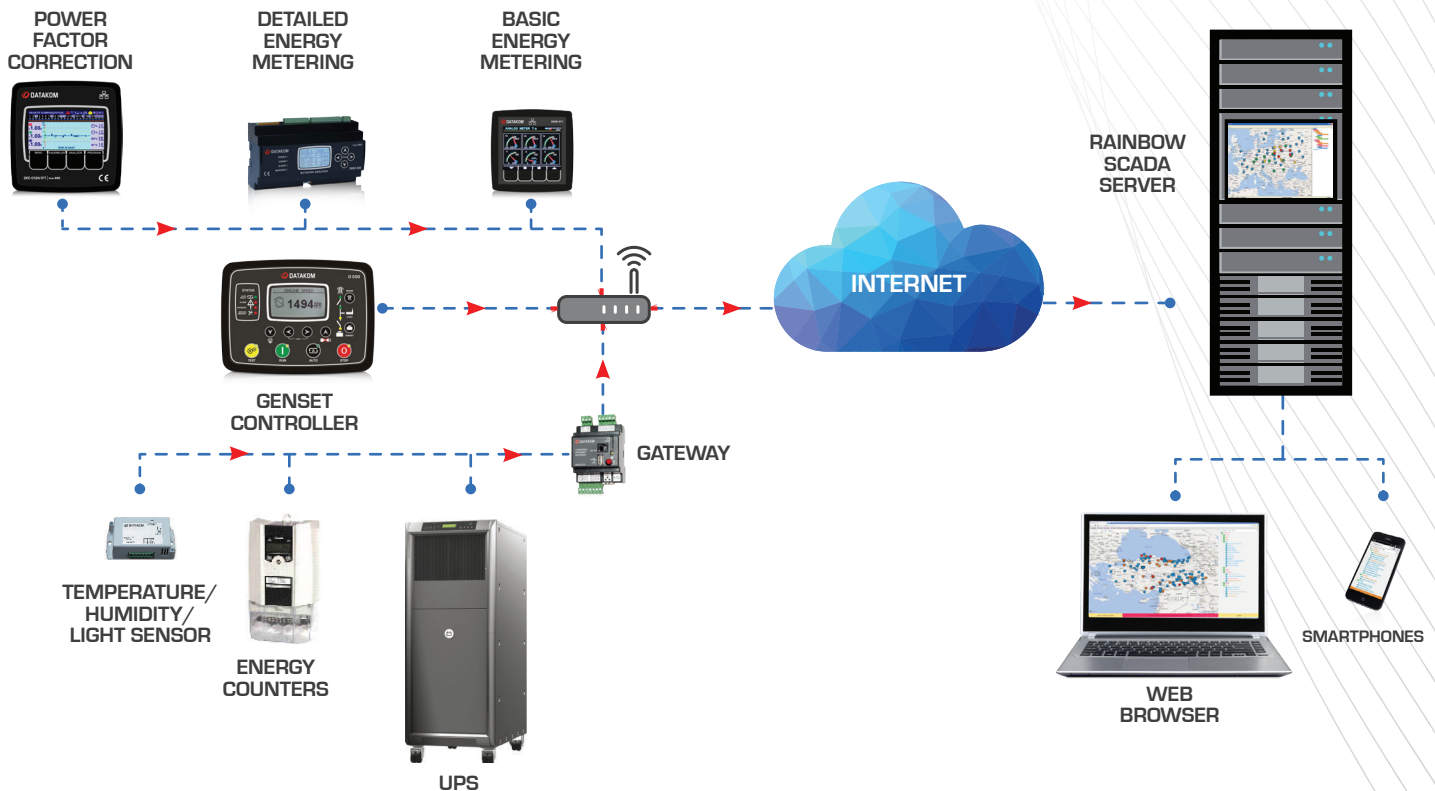


DKG-090 is a 4 band GSM MODEM providing GPRS class 12 communications over any GSM network. It features internet monitoring, SMS and e-mail capabilities for most Datakom modules.



The intelligent DKG-210 module connects any industrial device to the Rainbow Scada remote monitoring and control system, through internet. It supports standard gateway feature to send modbus requests to third party devices.

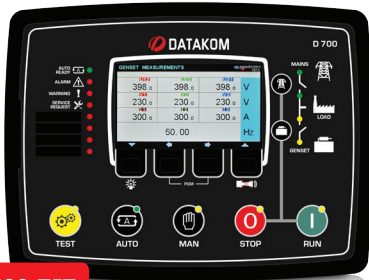
DATAKOM RAINBOW SCADA REMOTE MONITORING SYSTEM



Address : Serifali Mahallesi, Bayraktar Bulvari, Kutup Sokak
No:26- 34775- Umraniye / ISTANBUL- TURKEY
Phone : +90- 216 466 84 60 / +90- 216 466 84 61
Fax : +90- 216 364 65 65
e-mail : datakom@datakom.com.tr
Web : www.datakom.com.tr

GENSET PRODUCTS

Synchronization Units



D-700-TFT

Tailored for the most demanding applications, the D-700 provides synchronization, load share, mains synchronization, soft transfer, AMF, ATS, Remote Start, Engine control and remote display panel functionalities in a single unit

COMMUNICATIONS

- Ethernet (10/100Mb)
- 4-band GPRS modem (optional)
- USB Host & USB Device
- RS-485 (2400-115200baud)
- RS-232 (2400-115200baud)
- Micro SD card slot
- J1939-CANBUS
- Geo-locating through GSM
- GPS support (USB & RS-232)
- Embedded web server
- Web monitoring & programming
- Internet Central Monitoring
- SMS message sending
- E-mail sending
- Free PC software: Rainbow Plus
- Modbus RTU & Modbus TCP/IP
- SNMP

FUNCTIONALITIES

- Multi genset synch & load share
- Mains synchronization
- Single genset parallel with mains
- AMF unit (uninterrupted transfer)
- ATS unit (uninterrupted transfer)
- Remote start controller
- Manual start controller
- Engine controller
- Remote display panel
- Long term data record on flash
- On-board Input&output extension
- PLC functionality

Manual Synchronization



DKG-217

The DKG-217 is an innovative generator control unit integrating most functions for manually synchronized parallel gensets. Integrated functions are:

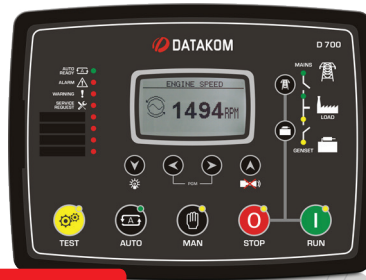
- manual start unit
- remote start unit
- led bargraph synchroscope
- configurable check synch relay



DKG-117

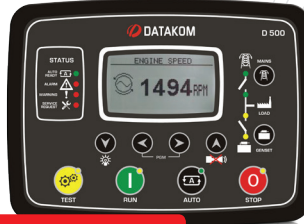
DKG-117 is a microprocessor controlled synchroscope with programmable synch check relay. It monitors the voltage and frequency of 2 independent power networks as well as the instantaneous phase angle between them.

Multifunctional Units



D-700

The D-700 is a comprehensive genset controller capable of all possible functions and communications.



D-500 - D-500-LITE

The D-500 is a cost effective genset controller ready for BMS integration and internet monitoring



D-300

The D-300 is a cost effective comprehensive genset controller ready for internet monitoring.



D-200 - D-100

The D-200 and D-100 are the lowest cost genset controllers ready for internet monitoring.

	D-100	D-200	D-300	D-500/LITE	D-500	D-700
Voltage Inputs Mains/Genset	3/3	3/3	3/3	3/3	3/3	3/3
Current Inputs Genset/Mains	3/0	3/0	3/0	3/0	3/0	3/3
Digital Outputs	5	5	6	6	8	8
Digital Inputs	4	6	8	8	8	12
Sender Inputs	3	3	3	3	4	7
Earth Fault Protection					■	■
J1939 Canbus Port	□	□	■	■	■	■
Internal Real Time Clock	■	■	■	■	■	■
Event Records with Measurements	400	400	400	400	400	400
RS-232 / Logical Serial Port			■	■	■	■
RS-485 Serial Port				■	■	■
10/100Mb Ethernet Port					■	■
Internal GSM Modem	□	□	□	□	□	□
SMS on Fault	■	■	■	■	■	■
E-mail on Fault	■	■	■	■	■	■
Embedded Web Site					■	■
MODBUS TCP/IP					■	■
SNMP Communication					■	■
PLC functionality					■	■

□ Optional ■ Available

GENSET PRODUCTS

ATS Panel



DKG-325

GENSET CONTROL & ATS PANEL

DKG-325 is a ready-to-use 12V-DC control and transfer panel for gasoline and diesel gensets rated up to 15kVA.

The transfer contactors and current transformers are internal to the module.

The unit includes all necessary components for battery charging, genset control and automatic load transfer between mains and genset with digitally programmable threshold levels, inputs and outputs.

FEATURES

- Internal transfer contactors
- 40 Amp rated Fuel and Crank outputs
- Internal battery charging rectifier
- Internal current transformers
- Detailed load measurements and protections
- Stop, preheat and choke output capability



DKG-225

AUTOMATIC MAINS FAILURE UNIT WITH INTERNAL CHARGER

DKG-225, is a low cost AMF controller for 12V-DC gensets, featuring an internal battery charger. Internal fuel and crank relays are rated at 40Amps@12V-DC and do not require external relays.

Thus a typical transfer panel will simply consist on one DKG-225 and two contactors, reducing material cost, panel size and production time.

FEATURES

- Internal battery charging rectifier
- 40 Amp rated Fuel and Crank outputs
- Front panel adjustable parameters
- Stop, preheat and choke output capability
- Survives cranking voltage droopouts
- Compact dimensions, panel mounted

AMF Units



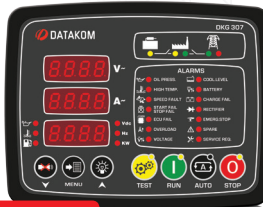
DKG-105

DKG-105 automatic mains failure unit is a microprocessor based digital unit offering all basic functions needed for the automatic control of a genset.



DKG-207

DKG-207 is a comprehensive AMF unit for a single generating set operating in standby mode.



DKG-307

DKG-307 is a comprehensive AMF unit for single genset standby or dual genset mutual standby operations.

The unit operates from -40 to +85 degrees C and is tested down to -70 degrees C.

Remote Start Units



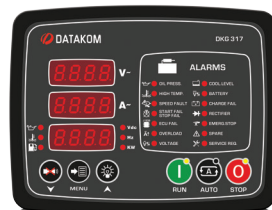
DKG-116

DKG-116 is a very low cost, comprehensive unit designed to start and stop a gasoline or diesel generating set both manually and remotely.



DKG-114

DKG-114 is a low cost engine control unit designed to start and stop the engine both manually and remotely.



DKG-317

DKG-317 is a comprehensive generator control unit designed to start and stop the generating set both manually and remotely.

The unit operates -40 to +85 degrees C and is tested down to -70 degrees C.

GENSET PRODUCTS

Manual Start Units



DKG-110

DKG-110 is a low cost unit providing engine protection functions in a manual generating set control panel.



DKG-151

DKG-151 is a low cost, microprocessor controlled unit designed to start and stop the genset manually using the key switch and pushbuttons on the front panel. It has high power relay outputs enabling it to interface directly with diesel gensets.



DKG-155

DKG-155 is a microprocessor controlled unit designed to start and stop the genset manually using the key switch on the front panel. In OFF position, DC supply is removed from the module, thus zero power consumption is achieved.

DC Genset Controller



DKG-379

DKG-379 is an advanced DC genset controller for both variable and fixed speed generating sets. It is available in 3 different versions, featuring a 7Amp actuator driver and J1939 electronic engine interface.

Battery Charger Controller

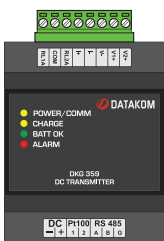


DKG-190

DKG-190 is a high tech product, designed to decrease genset operating engine hours mainly in telecommunication industry.

DKG-190 prevents the genset from running by feeding it with AC voltage until battery voltage level is lower than the set point.

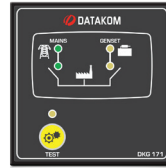
The genset starts running when AC voltage from DKG-190 is cut. Therefore, genset runtime is controlled by the DKG-190.



DKG-359

DKG-359 is a precision measurement tool designed for DC power systems to measure DC voltage and DC current. The unit has 2 voltage measurement inputs, and one DC shunt type current measurement input.

ATS Controllers



DKG-171

DKG-171 is a low cost, microprocessor controlled unit designed to monitor 3-phase mains voltages, send remote start command to the generating set and make changeover of both generator and mains contactors. The genset is supposed to be controlled by a Remote Start type control unit.



DKG-173

DKG-173 is a DIN Rail mounted ATS controller not requiring DC supply. The unit monitors 3-phase mains voltages, sends remote start command to the generating set and performs changeover of both generator and mains contactors.



DKG-175

DKG-175 is a DIN Rail mounted microprocessor controlled ATS controller without requiring DC supply. The unit monitors 3-phase mains voltages, sends remote start command to the generating set and performs changeover of both generator and mains contactors.



DKG-329 Dual

DKG-329

DKG-329 is designed to monitor 3-phase mains voltages, send remote start command to generating sets and control the changeover of both generator and mains contactors.

The DKG-329 is designed to control a 3-phase transfer panel having 1 mains and 2 gensets. It monitors 3-phase mains voltages, send remote start command to generating sets 1 and 2 and control the changeover of both generator and mains contactors.

Governor Controllers



DKG-253

The DKG-253 is a low cost electronic governor control unit designed to control the engine speed with fast and accurate response to load changes. The unit features an adjustable internal overspeed alarm relay with indicating led. This relay provides supplementary speed protection in case of speed control failure.

GENSET PRODUCTS

Battery Chargers



SMPS series are fixed output voltage, current limited lead acid battery chargers specially designed for permanent connection to genset starter batteries. They maintain the batteries fully charged, without overcharging or gassing.

	BC3A	BC4A	SMPS - 123	SMPS - 124 DIN RAIL	SMPS - 125	SMPS - 1210	SMPS - 1210 - D	SMPS - 242 DIN RAIL	SMPS - 243	SMPS - 245	SMPS - 2410	SMPS - 2410 - D	SMPS - 2420
V	12/24	12/24	12	12	12	12	12	24	24	24	24	24	24
C	2,5	4	3	4	5	10	10	2	3	5	10	10	20

Alternator Voltage Regulators



AVR-4



AVR-8



AVR-20



AVR-40

	AVR-4	AVR-5	AVR-8	AVR-12	AVR-20	AVR-40	AVR8-380
Output Current	4A	5A	8A	10A	20A	40A	8A
Min. Input Voltage (V)	190	190	190	190	190	190	190
Max. Input Voltage (V)	260	260	260	260	260	260	450
Max. Output @230V L-N	115	115	115	115	115	115	200
Voltage Adjust Pot	■	■	■	■	■	■	■
External Voltage Adjust	■	■	■	■	■	■	■
Stability Adjustment	■	■	■	■	■	■	■
50 / 60 Hz selection	■	■	■	■	■	■	■
Low Freq. Protection	■	■	■	■	■	■	■
Voltage Adjust Input	■	■	■	■	■	■	■
CT Droop Input			■			■	■
Overload Protection			■			■	■
High Temp. Protection			■			■	■
Input Low Voltage Prot.			■			■	■
Output Current Limit			□			□	
Isolated Measuring Input							■

□ Optional ■ Available

Diesel Compressor Controller



DK-30

The DK-30 is a high-tech product providing control and protection of diesel engine driven, screw or piston type air compressors. The controller incorporates all functions needed in a compressor control panel. Thus no additional modules are necessary resulting in lower panel cost.

Electric Compressor Controller



DK-45

The DK-45 is a high-tech product providing control and protection of screw or piston type air compressors driven by electric motors. The unit incorporates all functions needed in a compressor control panel. Thus no additional modules are necessary resulting in lower panel cost.

Earthquake Detector Units

DSD-xxx series are high-tech units detecting seismic accelerations. On the occurrence of an earthquake they close relay contacts to shutdown any critical devices such as generators, elevators, valves and industrial equipment.

Devices are based on highly reliable triple-axis silicon micromachined acceleration sensors. They are lightweight, small, maintenance free and capable of performing self-test.

The seismic properties are conformal to ANSI Z.21-70(1981) and ASCE 25-97 standards.



DSD-050

Earthquake Gas Shut-off Unit



DSD-060

Industrial Earthquake Relay



DSD-080

Multi Functional Industrial Earthquake Relay

Power Factor Controllers



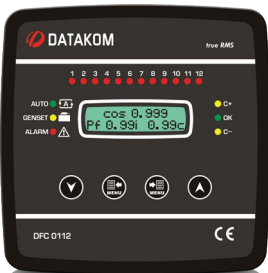
DFC-0124-TFT

The DFC-0124 is a flexible 24 step power factor controller, together with unrivalled remote monitoring capabilities over internet in a compact and low cost package. The module offers up to 24 on-board outputs, selectable as contactor or solid-state-contactor drivers. It offers 3 additional phase-controlled inductive drive outputs for the exact matching of the required power factor.



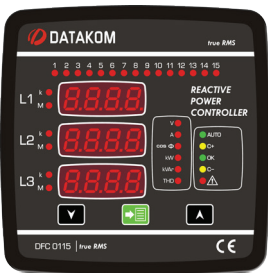
DFC-0124-LCD

The DFC-0124 is a flexible 24 step power factor controller, together with unrivalled remote monitoring capabilities over internet in a compact and low cost package. The module offers up to 24 on-board outputs, selectable as contactor or solid-state-contactor drivers. It offers 3 additional phase-controlled inductive drive outputs for the exact matching of the required power factor.



DFC-0112

The DFC-0112 is a flexible 12 step power factor controller, together with internal GSM modem in a low cost package.



DFC-0115

DFC-0115 is an advanced, sensitive power factor control device, which can match target power factor by using capacitors and inductors. The unit also works as a metering device, measures and displays various AC parameters of 3-phase distribution panels including harmonic distortion of phase voltages and currents. Total harmonic distortion can be measured by using 31 harmonics and also can be displayed individually.



DFC-0108

DFC-0108 is a low cost, 8 steps power factor controller capable of driving both capacitors and inductive reactors.

Phase Controlled AC Drivers



SVC-30

The SVC series are thyristor based solid state switches for phase controlled switching of inductors used in static power factor compensation where the target power factor is exactly met.

	Rating	Voltage	Reactor Rating	Nominal Current	Automatic Fan
SVC-05	5kVar	230 / 400V	3x1.7kVar	8A	
SVC-10	10kVar	230 / 400V	3x3.4kVar	16A	■
SVC-20	20kVar	230 / 400V	3x6.7kVar	30A	■
SVC-30	30kVar	230 / 400V	3x10kVar	50A	■

Static Switches



SSC-100

The SSC series are solid state switches for capacitor banks used in power factor compensation.

These contactors turn-on at zero voltage difference and turn-off at zero current without inrush currents.

They are the most convenient solutions for the compensation of fast varying loads, in the range of 0.05 to 10 seconds.

	Rating	Voltage	Number of Switches	Current
SSC- 05	5kVar	230 / 400V	3	3x8A
SSC- 10	10kVar	230 / 400V	3	3x16A
SSC- 15	16kVar	230 / 400V	3	3x25A
SSC- 30/3	30kVar	230 / 400V	3	3x50A
SSC-30/2	30kVar	400V	2	2x50A
SSC- 50/2	50kVar	400V	2	2x80A
SSC- 100/2	100kVar	400V	2	2x160A

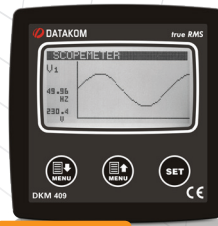
ENERGY QUALITY

NETWORK ANALYSERS



DKM-411

The DKM-411 is an advanced precision metering device offering an 3.5" size colour TFT, together with unrivalled remote monitoring capabilities over internet in a compact and low cost package.

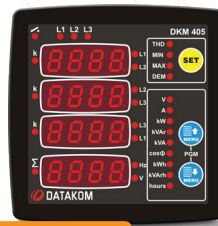


DKM-409

The DKM-409 is a precision instrument designed for displaying various AC parameters in 3-phase distribution panels. Thanks to its isolated RS-485 Modbus RTU communication port, the device is free from ground potential difference issues and measured parameters are safely transferred to factory and building automation systems. The unit has 2 programmable digital inputs and 2 programmable relay outputs.

COMMUNICATIONS

- Modbus RTU RS-485
- Modbus TCP/IP
- SNMP
- TCP/IP server
- TCP/IP client
- UDP
- SMTP
- Embedded web server
- Web monitoring
- Web programming
- GSM-SMS sending
- E-mail sending
- Central Monitoring through IP
- Free configuration & monitoring software



DKM-405

The DKM-405 is a low cost 92x92mm precision instrument designed to display various AC parameters in a 3-phase distribution panel. The unit has 1 digital input and 1 programmable relay output.

MEASUREMENTS

- Phase to phase voltages: U12-U23-U31-Uavg
- Phase to neutral voltages: V1-V2-V3-Vavg
- Phase currents: I1-I2-I3-Iavg-I_{tot}
- Active power: P1-P2-P3-ΣP
- Reactive power: Q1-Q2-Q3-ΣQ
- Apparent power: S1-S2-S3-ΣS
- Power factor: cos1-cos2-cos3-Σcos
- Active power counters: Pc1-Pc2
- Reactive power counters: Qc1-Qc2
- User counters: USR1-USR2-USR3-USR4
- 2...63 Harmonics of any voltage or current
- Phase to neutral voltages vector angles
- Phase to phase voltages vector angles
- Phasor vector diagram



DKM-407

The DKM-407 is a DIN rail mounted precision and low cost unit allowing measurement and remote monitoring of AC parameters in a distribution panel. Main applications are remote monitoring and energy management.

The unit provides 1 programmable digital input and 1 programmable relay output. Input/output functions are selected from a list.

	B&W Screen (2.9")	Color Screen (3.5")	RS-485 Modbus	Digital Inputs	Digital Outputs	Analog Outputs	USB Port	Isolated Current Input	Ground Current Input	DC Supply	AC Supply	1 mA Measurement	Record Memory	Real Time Clock	Accuracy %	True RMS	Harmonics	Micro-SD Card	Ethernet	USB Host	External GPRS Modem
DKM-409 - S	■										■				0,5	■	31				
DKM-409 - S4	■		■								■				0,5	■	31				
DKM-409	■		■	2	2						■				0,5	■	31				
DKM-409-T-S	■						■	■			■	■	1MB	■	0,5	■	49				
DKM-409-T-S4	■		■				■	■			■	■	1MB	■	0,5	■	49				
DKM-409-T	■		■	4	2		■	■		□	■	■	1MB	■	0,5	■	49				
DKM-409 - Pro	■		■	4	2	2	■		■	□	■	■	1MB	■	0,5	■	31	■			
DKM-409 - Pro - At - AC	■		■	4	2	3	■	■		□	■	■	1MB	■	0,5	■	49				
DKM-411		■	■	2	2		■			□	■			■	0,2	■	63		■	■	■

Multiple Network Analyser



DKM-430-PRO MULTIPLE NETWORK ANALYSER

- EQUALS TO 10 ANALYSERS
- 30 x CT INPUTS
- 24 FUSE INPUTS
- HARMONIC ANALYSIS
- INTERNAL GPRS MODEM

DKM-430-PRO is a precision instrument allowing the measurement, recording and remote monitoring of 10 3-phased or 30 single-phased feeders (or any combination of these two) in AC distribution panels.

The number and flexibility of current inputs allow the unit to be used in a variety of applications like power distribution network monitoring, ISO50001 energy efficiency or home and factory automation.

The unit offers additional 24 inputs capable of being used as FUSE detectors or digital inputs. Several combination of these two are available.

The optional internal GPRS modem allows remote monitoring and control of the distribution panel without the use of any additional module.

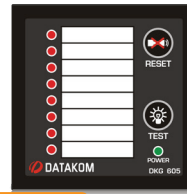
The standard model has universal 85-300VAC supply. 24-110VDC supply versions are available.

Current inputs of the unit are designed for 0.1A output current transformers (CTs). CTs are shipped together with the unit and are installed on cables.

FEATURES

- Equivalent to 10 3-phase analysers
- 24 fuse detector inputs
- True RMS measurements
- 1.0% measurement precision
- Internal record memory: 1MB
- Internal battery backed-up real time clock
- Astronomical relay function
- Isolated RS-485 serial port
- MODBUS-RTU communication
- Internal GPRS modem (optional)
- 2 programmable relay outputs
- 2 optically isolated programmable inputs
- Active-reactive energy counters
- USB port for programming
- Free programming software
- Graphic LCD, 128x64 pixels
- Wide supply range: 85-305VAC / 88-450VDC
- DC supply version available
- Wide operating temperature range

Alarm Annunciator



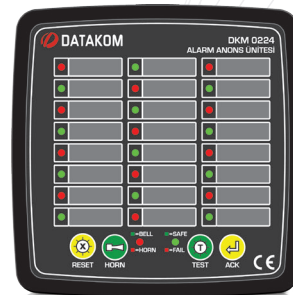
DKG-605

The DKG-605 is a compact 8 channel programmable alarm annunciator unit used in generating sets and diesel engines. It can be used as either an alarm extension module or a stand-alone alarm annunciator and shutdown device.



DKM-208

The DKM-0208 is an 8 channel, 96x96mm alarm annunciator, designed to be used in energy and automation systems. The module features 3 relay outputs rated at 5Amp. Relays provide Horn, Bell and Internal Failure functions. An additional buzzer is provided inside the unit for audible alarms.



DKM-224

The DKM-0224 is a 24 channel, 144x144mm alarm annunciator, designed to be used in energy and automation systems. The module features 3 relay outputs rated at 5Amp. Relays provide Horn, Bell and Internal Failure functions. An additional buzzer is provided inside the unit for audible alarms.

Temperature & Humidity Sensor



DKM-046

DKM-046 is a temperature and relative humidity sensor designed to provide data for automation, remote monitoring and control systems. The main unit support 3 temperature / humidity sensor inputs. The unit connects to the host system via its RS-485 serial port. Data is transferred under Modbus-RTU protocol.

Capacitive Voltage Indicator (LRM)



DKM-185

The DKM-185 is a passive voltage detector designed for medium voltage systems. It indicates visually the existence of high voltage on the 3-phase busbar without the need of an external supply. It conforms to IEC 61243-5 (LRM) standard.

It has also optional relay outputs for remote monitoring or additional protections setups.

ENERGY QUALITY

Protection Relays



DPR-02/03/05/06 relays are three-phase voltage protection relays designed to be used for voltage protection in distribution substations, generators, motors, transformers and capacitors in compensation systems.

	Phases	Topology	Low Voltage Protection	High Voltage Protection	Phase Order Protection	Phase Loss Protection	Adjustable Trip Delay	Adjustable Reclose Delay	DIN Rail Mount	Adjustable Voltage Low Limit	Adjustable Voltage High Limit	Asymmetry Protection	6A/277V AC Relay Output	Output Type
DPR-02 Phase Protection	3	Ph-N	■	■	■	■	■	■	■	■	■	■	■	NC-NO
DPR-03 Phase Protection	3	Ph-Ph	■	■	■	■	■	■	■	■	■	■	■	NC-NO
DPR-05 Motor Protection	3	Ph-N	■	■	■	■	■	■	■	■	■	■	■	NC-NO
DPR-06 Motor Protection	3	Ph-Ph	■	■	■	■	■	■	■	■	■	■	■	NC-NO

Network Analyzer & Protection Relay



DPR-350

DPR-350 is a state of the art network analyzer and directional protection relay in 96x96mm standard panel dimensions. 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. Protection functions and standards are same as DPR-400

Protection Relay



DPR-400

The DPR-400 is a next generation directional protection relay unit combining precision, user friendliness and flexibility together with a reliable and low cost design.

It offers various protection curves that can be used in combination for more precise protection.

Besides protection functions, the unit is also a 0.5% precision power analyzer. This is achieved

with independent protection and measurement circuits.

The unit provides USB, Ethernet and isolated RS-485 comports. Modbus and IEC60870-5-103 communication protocols are supported.

Transformer Temperature Protection



DPR-145

DPR-145 is a precision unit designed for the temperature protection of dry type or resin filled MV transformers. The unit offers a high degree of protection against electromagnetic disturbances. It has 4 temperature inputs of PT100 type. Three of them are used for the transformer protection. The fourth input may be used as core temperature protection or ambient temperature monitoring.

Transformer Step Indicator



DPR-165

DPR-165 is a precision instrument designed to indicate transformer step information and temperature. The unit offers a high degree of protection against electromagnetic disturbances. The unit reads resistor values found on step changers of power transformers. It has also a 0-20mA analog input for the monitoring of transformers equipped with analog step transducers.

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

PROTECTION CURVES

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

STANDARDS

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