

DKM-411

POWER ANALYSER

- COLOUR TFT SCREEN
- IP COMMUNICATIONS
- HARMONIC ANALYSIS
- SCOPEMETER

The DKM-411 is an advanced precision metering device offering an 3.5" size, 320x240 pixel color TFT, together with unrivalled remote monitoring capabilities over internet in a compact and low cost package.

The unit itself is a web page and can be opened through any browser for remote monitoring.

The central monitoring feature allows monitoring of thousands of meters from one central PC.



FEATURES

- True RMS measurements, 0.2% accuracy*
- 3.5" TFT LCD, 320x240 pixels*
- Harmonic distortion display (63 harmonics)*
- Oscilloscope, waveform display*
- Phasor diagram display*
- Internal battery backed-up real time clock*
- Max demand display*
- User configurable display screen*
- 2 configurable relay outputs*
- Energy pulse output capability*
- 2 opto-isolated, configurable digital inputs*
- Dual active-reactive power counters*
- Both mains/generator energy metering*
- Configurable user counters*
- Voltage transformer ratio for MV applications*
- Password protected front panel programming*
- Reduced panel depth*
- Sealed front panel (IP54)*

MEASUREMENTS

- Phase to phase voltages: U12-U23-U31-Uavg
- Phase to neutral voltages: V1-V2-V3-Vavg
- Phase currents: I1-I2-I3-In-Iavg-Itot
- Active power: P1-P2-P3- Σ P
- Reactive power: Q1-Q2-Q3- Σ Q
- Apparent power: S1-S2-S3- Σ S
- Power factor: cos1-cos2-cos3- Σ cos
- 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

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-SMSSending*
- e-mailsending*
- Central Monitoring through IP*
- Free configuration & monitoring software*

COMMUNICATION PORTS

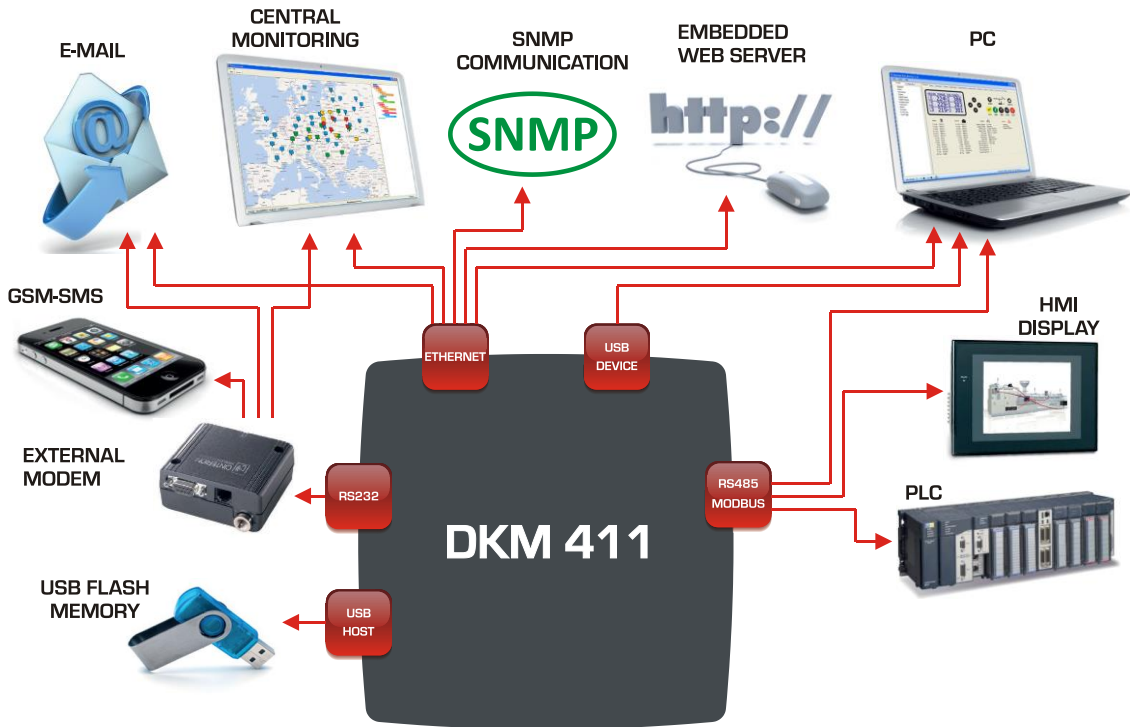
- Ethernet 10/100Mb*
- RS-485 isolated (Modbus RTU)*
- RS-232 for external GPRS modem*
- USB Host for data recording on flash memory*
- USB Device for PC connection*

SUPPORTED TOPOLOGIES

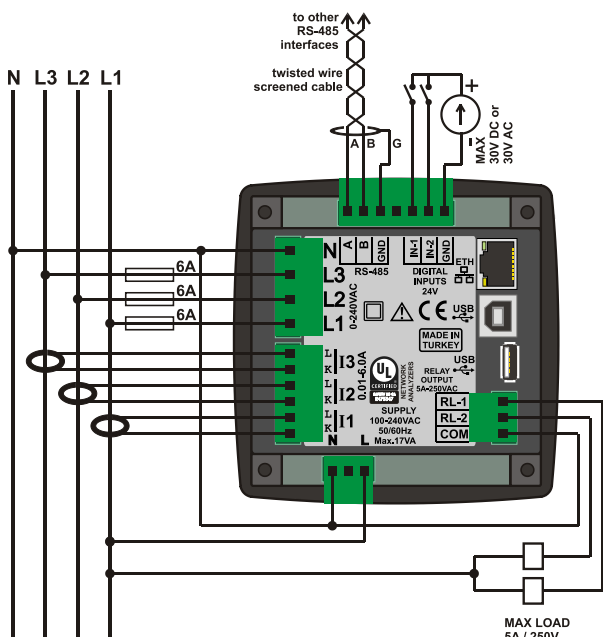
- 3 phases 4 wires, star*
- 3 phases 3 wires, 3 CTs*
- 3 phases 3 wires, 2 CTs (L1-L2)*
- 3 phases 3 wires, 2 CTs (L1-L3)*
- 3 phases 4 wires, delta*
- 2 phases 3 wires, L1-L2*
- 2 phases 3 wires, L1-L3*
- 1 phase 2 wires*



COMMUNICATION DIAGRAM



CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

Power Supply Input:

85 to 300V AC, 50 - 60Hz nominal ($\pm 10\%$)
DC supply versions available.

Power Consumption:

< 5 VA

Measurement Input Range:

Voltage: 5 - 300 V AC (L-N)
10 - 520 V AC (L-L)
Current: 0.1 - 5.5 A AC
Frequency: 30 - 500 Hz

Accuracy:

Voltage: 0.2%+1 digit
Current: 0.2%+1 digit
Frequency: 0.1%+1 digit
Power(kW,kVA): 0.4%+2 digit
Power factor: 0.2%+1 digit

Measurement Range:

CT range: 5/5A to 10'000/5A
VT range: 0.1/1 to 200.0/1
kW range: 0.1 kW to 6.5MW

Voltage burden:

< 0.1VA per phase

Current burden:

< 1VA per phase

Relay Outputs:

5A @ 250V AC

Digital Inputs:

Active level: 5 to 30V-DC or AC
Min pulse: 250ms.
Isolation: 1000V AC, 1 minute

Operating Temperature:

-20°C to +50°C (-4 to +176 °F).

Maximum humidity:

95% non-condensing.

Degree of Protection:

IP 65 (Front), IP 30 (Back)

Enclosure:

Non-flammable, ROHS compliant

Installation:

Flush mounting with rear brackets

Dimensions:

102x102x53mm (WxHxD)

Panel Cutout:

92x92mm

Weight:

350 gr

UL-CSA Certification:

UL 61010-1, 3rd Edition, 2012-05,
CAN/CSA-C22.2 (File: E475547, Vol. D1)

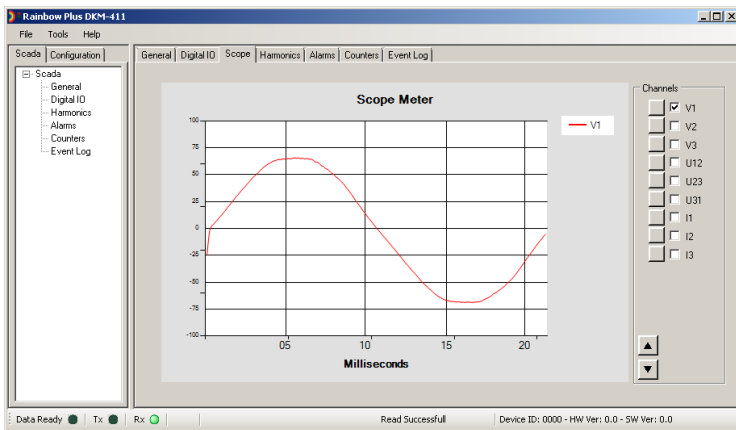
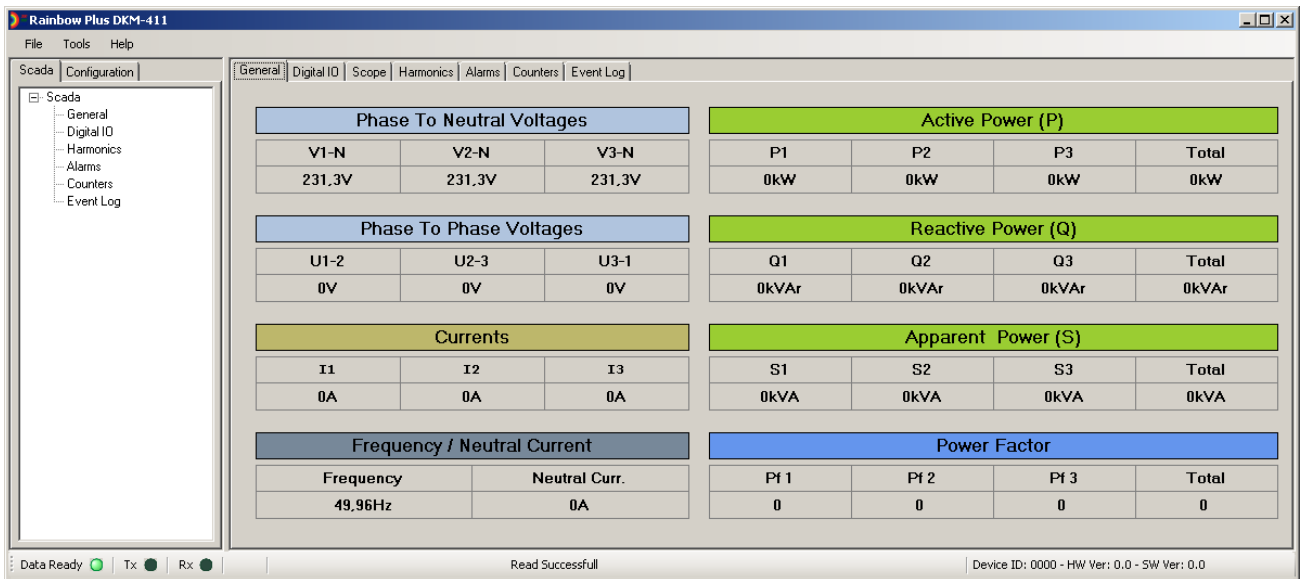
EU Directives:

2006/95/EC (LVD)
2004/108/EC (EMC)

Norms of reference:

EN 61010 (safety)
EN 61326 (EMC)

RAINBOW PROGRAM



Rainbow Plus 2.5

Cancel Scada Data

Serial Port
 TCP/IP
 USB
 Rainbow Scada

TCP/IP Settings:

IP Address: 192.168.2.6 Device Address: 1

Modbus Port: 502 Scan Interval: 1500 ms

No Connection State TX RX

Rainbow Plus DKM-411

Options: **Timers** | Voltage | Frequency | Current | Load

Timers

- Duration Time for Volt. Alarms: 30 sec
- Duration Time for Freq. Alarms: 30 sec
- Dur. Time for Act. Pow. Alarms: 30 sec
- Dur. Time Reac. Pow. Alarms: 30 sec
- Dur. Time for Cos. Alarm: 30 sec
- Dur. Time for Current Alarm: 30 sec
- Dur. Time for THD-V Alarm: 30 sec
- Dur. Time for THD-I Alarm: 30 sec
- Volt. Unbalance. Duration: 30 sec
- Curr. Unbalance Duration: 30 sec

Status: Data Ready Tx Rx Read Successful! Device ID: 0000 - HW Ver: 0.0 - SW Ver: 0.0

CENTRAL MONITORING

Cihaz Değerleri (ENERJI ANALIZORU)

V1 : 221.3 V	P1 : -0.02 kW	THD_V1 : 2.4	Frekans : 49.99 Hz
V2 : 227.9 V	P2 : 0.06 kW	THD_V2 : 2.0	V_Internal : 23.0 Vdc
V3 : 219.7 V	P3 : 0.16 kW	THD_V3 : 1.9	V_avr : 222.9 V
U12 : 387.5 V	Q1 : -0.90 kVAR	THD_U12 : 1.6	U_avr : 386.1 V
U23 : 385.9 V	Q2 : -1.22 kVAR	THD_U23 : 3.0	I_avr : 4.3 A
U31 : 385.0 V	Q3 : 0.77 kVAR	THD_U31 : 2.4	V_dengesiz : 0.7 %
I1 : 4.1 A	S1 : 0.90 kVA	THD_I1 : 19.0	I_dengesiz : 4.6 %
I2 : 5.4 A	S2 : 1.22 kVA	THD_I2 : 27.0	
I3 : 3.6 A	S3 : 0.78 kVA	THD_I3 : 15.7	
In : 12.9 A		THD_In : 61.2	
P_tot : 0.20 kW	pf_L1 : -0.022		
Q_tot : -1.35 kVAR	pf_L2 : -0.049		
S_tot : 2.90 kVA	pf_L3 : 0.205		
pf_avg : -0.068	Q/P_L1 : 100.0		
Q/P_avg : 100.0	Q/P_L2 : 100.0		
	Q/P_L3 : 100.0		

EMBEDDED WEB SERVER

WEB Scada

Measurements Counters Events Alarms

LINE	POWER	THDs
L1 Volt : 230.2 V	Tot P : 200.7 kW	THD_L1 : 0.4 %
L2 Volt : 230.1 V	Tot Q : 51.1 kVAR	THD_L2 : 1.6 %
L3 Volt : 230.1 V	Tot S : 207.1 kVA	THD_L3 : 1.6 %
L12 Volt : 399.0 V	PowFactor : 0.969 ind	THD_L12 : 1.9 %
L23 Volt : 398.6 V	Demand I1 : 300.9 A	THD_L23 : 8.3 %
L31 Volt : 398.5 V	Demand I2 : 300.6 A	THD_L31 : 2.1 %
L1 Amps : 300.5 A	Demand I3 : 300.4 A	THD_I1 : 0.4 %
L2 Amps : 300.1 A	Demand I0 : 300.5 A	THD_I2 : 1.5 %
L3 Amps : 300.3 A	Demand P : 207.4 W	THD_I3 : 1.2 %
N Amps : 0.0 A	Demand Q : 51.3 kVAR	THD_In : 0.0 %
Frequency : 50.00 Hz		
V-avg : 230.1 V		
V-rms : 236.7 V		
I-avg : 300.3 A		

Web Monitoring

WEB Scada

Measurements Counters Events A

Counters

Import Power (kWh-In)	1368.2 kWh
Export Power (kWh-EK)	504.3 kWh
Inductive Power (kVARh-In)	13.8 kVARh
Capacitive Power (kVARh-CP)	42.4 kVARh
Import Power (kWh-In)	0.0 kWh
Export Power (kWh-EK)	0.0 kWh
Inductive Power (kVARh-In)	0.0 kVARh
Capacitive Power (kVARh-CP)	0.0 kVARh
Input Counter 1 (InCnt-1)	0
Input Counter 2 (InCnt-2)	0

Web Monitoring

WEB Scada

Measurements Counters Events Alarms

Event	Alarm	Event	State	Source	I1	I2	I3	Frequency	I12	I23	I31	I1	I2	I3	I12	I23	I31	
0	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
1	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
2	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
3	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
4	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
5	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
6	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
7	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
8	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
9	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
10	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
11	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
12	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
13	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
14	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V
15	Pressure 0	27-03-2002 09:30:00	176 V	176 V	176 V	50.0 Hz	305 V	305 V	305 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V	100 V

Event Log Display

