

**DC Power Meter**

**DCPM 02 RSE**



## APPLICATION

DCPM02 RSE is Digital bidirectional metering system, designed for DC Power Measurements. It has possibility to work with different external current sensor as Shunts and Hall-Effect current sensors or DC CT. Measurement range is up to 32000A and 300V. DCPM 02 RSE is compatible with SCADA.

## INPUTS

DCPM02 RSE has two Voltage Inputs, Hall Effect Sensor Input and Auxiliary Power Supply Input. All of it are protected against over loads.

## CURRENT SENSORS

Shunts – Up to 300 mV selectable by User. Max Amps selectable by User is up to 32000A. Hall-Effect Current Sensor – It is based on Allegro Hall Effect Linear Current Sensor IC with 3 kV RMS Voltage Isolation and a Low-Resistance Current Conductor.

## CONFUGURATION

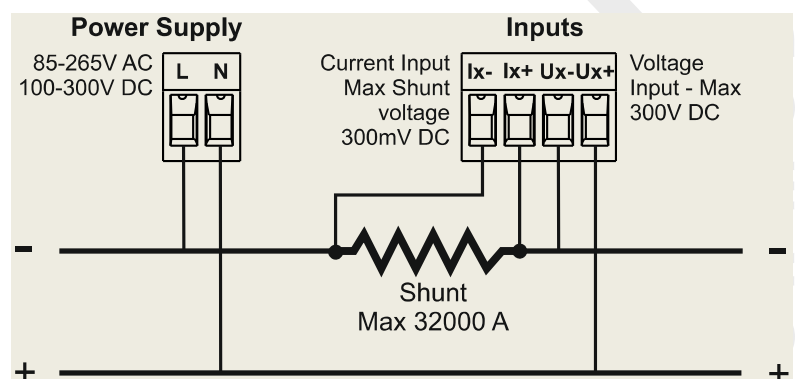
Manually-by front panel buttons.  
By Configuration Software.

## EXTERNAL SOFTWARE

Any SCADA Software supported Modbus RTU or Modbus TCP

## WIRING

Wiring diagram is shown on the graphics. Follow the shown connections very carefully. Any wiring different than shown will affect damage on DCPM02.



## POWER SUPPLY

DCPM 02 RSE has Internal Pulse Power Supply 36-72 V AC/DC or 85-265 V AC/DC. Optional 12(24)V DC.

## COMMUNICATIONS

DCPM 02 RSE supports:

Serial port RS232, RS485, RS422 located on the back panel by two RJ 45 connectors.

Protocol Modbus RTU.

Max speed of communications is 57 600 adjustable by Configuration Software.

Max node addresses are 250.

Prohibited addresses for use are 251 to 255.

Max length of the communication line is 1200 m.

LAN Port – Client/Server, Support up to 8 clients, 100 Mb, Скорост - 600 bps – 1024K bps

Два вградени светодиода за индикация показват Link и Data transfer на данни.

Protocol Modbus TCP

Мрежови протоколи IP, TCP, UDP, DHCP, DNS, HTTP, ARP, ICMP, Web socket, HTTPD Client

Глобален уникален MAC адрес IEEE.

Формат на данните - 5, 6, 7, 8 bits, Стоп битотове 1, 2, Parity, None, Even, Odd, Space, Mark



## MODBUS RTU REGISTER TABLE

### INPUT VALUES - Read Only Registers

BEGIN	1000		Voltage value		Decimal point position defined by Register U_LINE_DP
U_LINE	1000	float			
			Current value		$\geq 0$ - Export, - Import, $< 0$
I_LINE	1002	float			Decimal point position defined by Register I_LINE_DP
			Power value		$\geq 0$ Export, $< 0$ Import,
P_LINE	1004	float			Decimal point position defined by Register P_LINE_DP, Dimension by Register P_LINE_DIM
			Voltage averidge value		Decimal point position defined by Register U_LINE_DP
U_AVER	1006	float			
			Current averidge value		$\geq 0$ Export, $< 0$ Import,
I_AVER	1008	float			Decimal point position defined by Register I_LINE_DP
			Power averidge value Import		Decimal point position defined by Register P_LINE_DP, Dimension by Register P_LINE_DIM
P_AVER_IMP	1010	float			



P_AVER_EXP	1012	float	Power averidge value Export	Decimal point position defined by Register P_LINE_DP, Dimension by Register P_LINE_DIM
Q_IMPORT	1014	double	Energy Import	Decimal point position defined by Register Q_DP, Dimension by Register Q_DIM
Q_EXPORT	1018	double	Energy Export	Decimal point position defined by Register Q_DP, Dimension by Register Q_DIM
K_EFF_AV	1022	float	Efficiency averidge	Format x.xxxx
K_EFF_TOT	1024	float	Efficiency Total	Format x.xxxx

#### SET VALUE - Read/Write Registers

BEGIN 2000

























U_LINE_DP	2000	integer	Voltage Decimal Point Position 0 - xxxxxxx 1 - xxxxxx.x
I_LINE_DP	2001	integer	Current Decimal Point Position 0 - xxxxxxx 1 - xxxxxx.x
P_LINE_DP	2002	integer	Power Decimal Point Position 0 - xxxxxxx 1 - xxxxxx.x 2 - xxxxx.xx
Q_DP	2003	integer	Energy Decimal Point Position 0 - xxxxxxx 1 - xxxxxx.x 2 - xxxxx.xx
P_LINE_DIM	2004	integer	Power Dimension 0 - W, 1- kW, 2 - MW
Q_DIM	2005	integer	Energy Dimension 0 - Wh, 1- kWh, 2 - MWh



MODBUS_BAUD_RATE	2006	int	0 - 4800, 1- 9600, 2 - 14400, 3 - 19200, 4 - 28800, 5 - 38400, 6 - 57600
MODBUS_ADDR	2007	int	1 - 254 Service Address - 255
SH_HALL	2008	int	0 - Shunt, 1 - Hall
I_LINE	2009	int	Current Value 0 - 32000 A
U_SHUNT	2010	int	Shunt Voltage 0 - 300 mV

## MANUAL OPERATIG GUIDE

To look at all measurements use buttons **Up** and **Down**. The whole data is according to table below.

No	Display	Description	Buttons
1	U, V	Voltage	 
2	I,A Imp/I,A Exp	Current	 
3	P,kW Imp/ P,kW Exp	Power	 
4	Ua, V	Voltage average	 
5	Ia, A	Current average	 
6	Pa,kW Imp	Power Average Import	 
7	Pa,kW Exp	Power Average Export	 
8	Qim, Wh, kWh, MWh	Energy Import	 
9	Qex, Wh, kWh, MWh	Energy Export	 
10	Eff a, %	Efficiency Average	 
11	Eff t, %	Efficiency Total	 
12	dd.mm.yy/hh:min:ss	Clock	 

## MANUAL SETTINGS GUIDE

Settings Input - press and hold buttons



### 1. Parameter Choice

- First Display Line

name of the parameter

- Second Display Line

chooses by button



according table below\*

To go out of the choice press



. To safe choice press



### 2. Parameter Editing

- First Display Line

Name and Dimension

- Second Display Line

Value of the Parameter.

To set Number press



. Value must be not more than  $\pm 32768$ . To change position

of the

cursor press button



To go out of the choice press





. To safe choice press



No	Display line 1	Display line 2	Description
1	DP U	xxxxx xxxx.X	Voltage - Decimal point
2	PD I	xxxxx xxxx.X	Current - Decimal point
3	DP P	xxxxx xxxx.X xxx.XX	Power - Decimal point
4	DP Q	xxxxx xxxx.X xxx.XX	Energy - Decimal point
5	P dim	W kW MW	Power - Dimension.
6	Q dim	Wh kWh MWh	Energy - Dimension
7	Clr All!		Average and Totalize Registers clearing

### 3. System Parameter Editing

Press  and . Use table below to add or editing System parameters

	Display line 1	Display line 2	Description
1	Year	xxxx	Year
2	Month	xx	Month
3	Day	xx	Day
4	HH:MM	xxxx	Hour:Minute
5	Address	xxx	Nod Address
6	Baud	4800 9600 14400 19200 28800 38400 57600	Boud Rate
7	Sh/Hall	Shunt Hall	Type of sensor
8	I Shunt	xxxxx	Max Current of the shunt (Up to 32000A)
9	U Shunt	xxx	Max Voltage of the Shunt, mV (до 300 mV)

### 4. Calibrating

For calibrating press  and . Use table below to proceed calibrating

	Display line 1	Display line 2	Description
	Umax, V	xxxx	Max Voltage
	Cal 0 V	Code	0 V Calibrating
	Cal Umax	Code	Max Voltage Calibrating
	Cal 0	Code	Currency Input Calibrating 0 mV
	Cal 75	Code	Next Step Calibrating 75 mV
	Cal 150	Code	Next Step Calibrating 150 mV
	Cal 300	Code	Next Step Calibrating 300 mV
	Cal -75	Code	Next Step Calibrating -75 mV
	Cal -150	Code	Next Step Calibrating -150 mV
	Cal -300	Code	Next Step Calibrating -300 mV

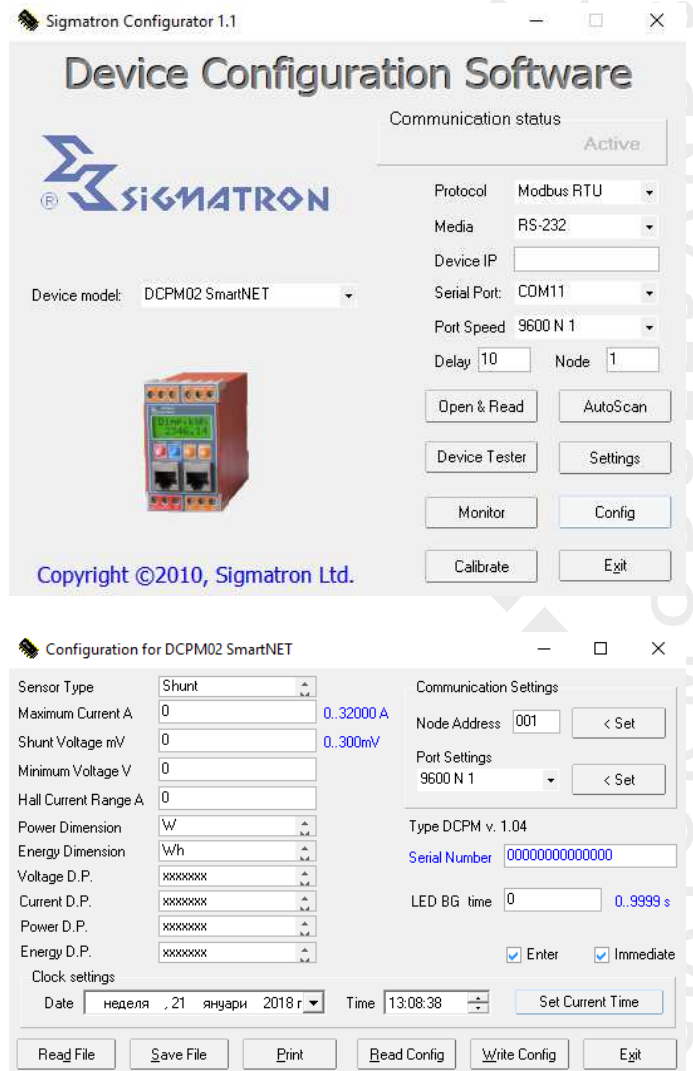
## SOFTWARE SETTINGS TOOL

The Power meter DCPM02 RSE has Software Configuration Tool for settings. To start procedure the DCPM02 RS have to be exclude from Serial line RS485/422. From Device model menu choice DCPM 02. Click the button "Auto scan". The Tool automatically will find your device and open communication.

Click button "Config" to start settings. After settings parameters can be saved in file and printing on paper form.

Click button "Monitor" to start reading DCPM02

Click button "Calibrate". Apply signal from the calibrator etalon voltage to the Inputs. The Tool will show you trends and Accuracy.





## TECHNICAL SPECIFICATIONS

### INPUTS

- Voltage input – 0-300 V DC
- Current Input – 0-300 mV Shunt

### MEASUREMENTS

- Voltage - V
- Current - A
- DC Power Export – W, KW, MW
- DC Power Import – W, KW, MW
- Voltage Average
- Current Average
- DC Power Average
- Efficiency Average %
- Efficiency Total %
- Total Power Export – Wh, KWh, MWh
- Total Power Import – Wh, KWh, MWh
- Real Time Clock – dd,mm,yyyy, hh,mm

### ACCURACY

- Voltage – 0.1%
- Current – 0.1%
- Power (Shunt) – 0.25 (0.5)%
- Power (Hall Effect Sensor) – 1%

### DISPLAY

- 2 x 8 monochromatic LCD display
- LED for Manual configuration mode
- LED for Data Transfer.
- Controlled Back Light.

### OPERATORS INTERFACE

- Process Data screen:
- Configuration Data screen

### CONTROL

- 4 buttons on the front panel

### COMMUNICATION

#### Serial Modbus RTU

- Slave
- RS-232/485/422
- Communication speed Up to 57 600

#### LAN - Modbus TCP

- Client/ Server

### EXTERNAL CONFIG SOFTWARE

- Automatic Auto Scan mode
- Configuration tools
- Print options for configurations
- Safe options for configurations
- Device Measurement Monitoring
- Device Calibrating Tool

### CONNECTIONS

#### Input/Output Terminals

- Terminal block 2.5 mm<sup>2</sup>

#### Communication Ports

- Equal Serial pair RJ45
- Serial A: RJ 45 connector RS232/485/422.
- Serial B: RJ 45 connector RS232/485/422
- LAN Port

### POWER REQUIREMENTS

#### Power Supply

- 16 -32 V AC/DC
- 36 -72 V AC/DC
- 85 -265 V AC/DC

### MECHANICAL

#### Mounting

- DIN Panel case
- Dimensions 96 x 48 x 119.

#### Weight

- 0.4 kg

### ENVIRONMENT

#### Operating Temperature Range:

- DCPM02 RSE -20 to +60 °C
- Shunt -20 to +60 °C
- Hall Effect Sensor -40 to +85(150)°C

#### Humidity:

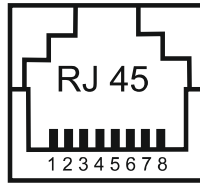
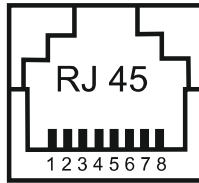
- 0 - 90% RH without condense

#### Customer support:

1111 Sofia, Bulgaria  
35 "Edison" Str.  
Phone/Fax ++359 2 871 3727  
[office@sigmatron.bg](mailto:office@sigmatron.bg)  
[www.sigmatron.bg](http://www.sigmatron.bg)

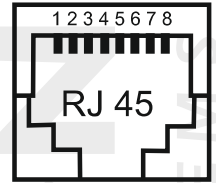
## COMMUNICATION PORTS

On the Graphic diagram is shown wiring of RJ45 connectors of the Serial port A and B and positions of the connectors on the back panel.



- 1 Common
- 2 RxD 232
- 3 TxD 232
- 4 RTS 232
- 5 RxD 422 +
- 6 RxD 422 -
- 7 TxD 422 + /485 +
- 8 TxD 422 - /485 -

Serial Port RS232/485/422



LAN Port