

DPM-10

Digital, fully featured Power Meter



Multiple Display
That Shows It All

DPM-10



DPM-10 Features

The DPM-10 is an advanced microprocessor-based Electronic Power Meter, which combines highly accurate readings with reliability, for full supervision and monitoring of electric power. By replacing several analogue devices and selector switches, the DPM-10 is a cost effective alternative providing the enhanced flexibility required by modern power systems.

Easily integrated into any energy management network, the DPM-10 includes RS 485 communication with open MODBUS protocol which can provide bi-directional access to and from any power monitoring system.

Advantages at a Glance

- True RMS measurement (scan time 0.5 mSec.)
- Accurate calculation of non-sinusoidal waveform
- Power & Energy measurements
- Accuracy class 0.5 with long term stability
- Bright Seven Segment, visual clarity at long distance viewing
- Programmable parameters display configuration
- User-friendly programming via front panel or communication
- Programmable Pulse output Relay (KWH)
- Versatile communication RS 485 & 232 with Modbus Protocol
- Suitable for 3 or 4 wire systems, 2 or 3 C/Ts and P/Ts
- Isolated inputs
- Electro magnetic compatibility
- Compact 144 x 144 x 95 mm

Instantaneous Measurements

- Voltage - 3 phase to phase (V, KV)
- Voltage - 3 phase to neutral (V, KV)
- Current - 3 phases (A, KA)
- Maximum demand (A, KA)
- Active Power (KW, MW)
- Reactive power (KVAR, MVAR)
- Active Energy (KWH, MWH)
- Reactive Energy (KVARH, MVARH)
- Power Factor (Lag or lead)
- Frequency (Hz)

Typical Applications

- Panel boards, switchboards, switchgear, MCCs
- Diesel Generator sets (4 quadrants calculation)
- UPS systems
- Stand alone display mode or as part of an energy monitoring system

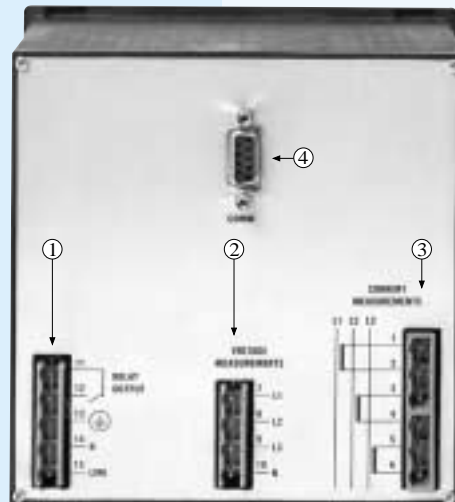
Front & Rear Panels

Front Panel



User friendly four key front panel for easy programming.

Rear Panel



- ① Control supply and Pulse (KWH) output
- ② Mains voltage measurement
- ③ Mains current measurements
- ④ RS232 and RS485 Modbus communication

Ranges & Accuracy

Parameter	Range	Accuracy **
Voltage - L / L *	0 - 9999V	± 0.3% of reading & ± 0.3% of full scale ± 1 digit (in the range of 10-115% of full scale)
Voltage - L / N *	10-99.99KV, 100-999.9KV	
Current *	0-9999A, 10-60KA	
Max Demand *	0-9999A, 10-60KA	
Active Power	0-9999KW 10-99.99, 100-999.9, 1000-2140MW	± 0.5 % of reading & ± 0.3 % of full scale ± 1 digit (in the Voltage & Current ranges 10-120% of full scale & P.F range ± 0.5)
Reactive Power	0-9999KVAR 10-99.99, 100-999.9, 1000-2140 MVAR	
Energy	0-9999KWH 10-99.99, 100-999.9, 1000-9999MWH	
Reactive Energy	0-9999KVARH 10-99.99, 100-999.9, 1000-9999MVARH	
Power Factor	0-1 Lag or Lead	± 0.005
Frequency	45 - 65 Hz	± 0.1

* Each phase.

** Accuracy is at a temperature range of 15 - 30°C, add 0.02% for each degree above 30°C.

Parameters Scrolling & Displays

Parameter Scroll & Display

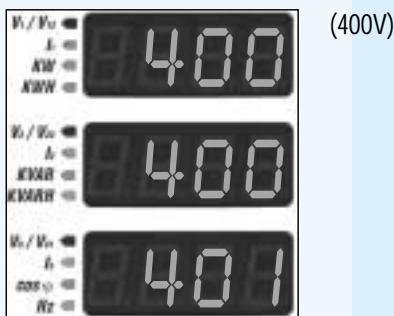
Parameters are shown on large Seven Segment Displays comprised of four digits, guided by four LEDs which characterize the displayed parameter.

When there is no decimal point - parameters are displayed in Volts, Amps, KW, KWH, KVAR or KVARH.

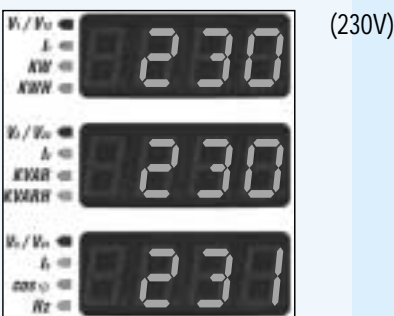
When a decimal point appears, the display will be in KV, KA, MW, MWH, MVAR or MVARH.

Parameter scrolling with the SELECT key:

Voltage-Line to Line



Voltage-Line to Neutral



Special Display Mode

For special applications an additional display mode is available allowing selection of any combination of displays.



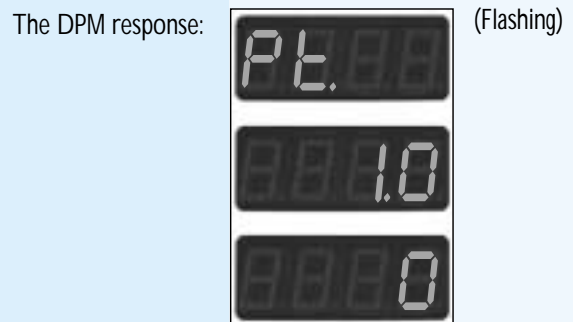
Parameter Review & Setting

List of Parameters:

No	Description
0	Potential Transformer (P/T) ratio
1	Current Transformer (C/T) primary
2	Wiring configuration
3	Display Period
4	Max. Demand Period
5	Power Per Pulse (Pulse Initiator Relay)
6	Device No. - customer reference
7	Device No. on serial link
8	Baud rate for serial link
9	Special display selection, Upper window
10	Special display selection, Center window
11	Special display selection, Lower window

Example - First parameter

To review or modify parameters press PAGE key continuously until the upper display starts flashing:



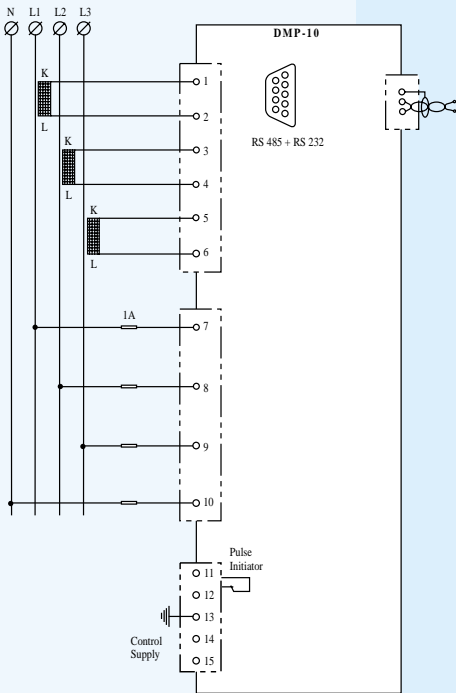
Modify the parameter with keys. Store the new values in the non-volatile memory by pressing simultaneously.



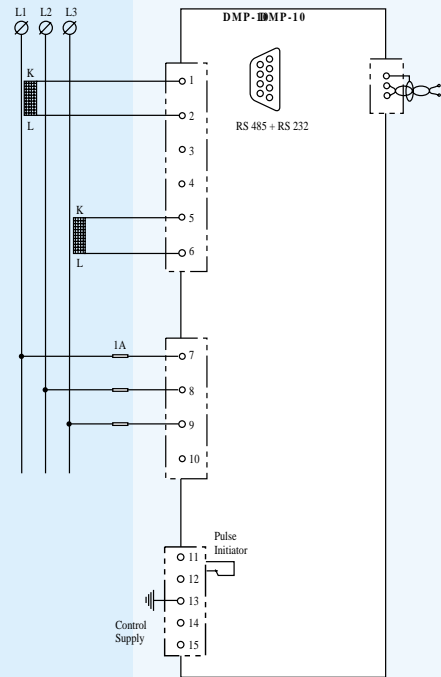
Wiring

The DPM-10 is designed for connection to three phase systems, with or without neutral wire.

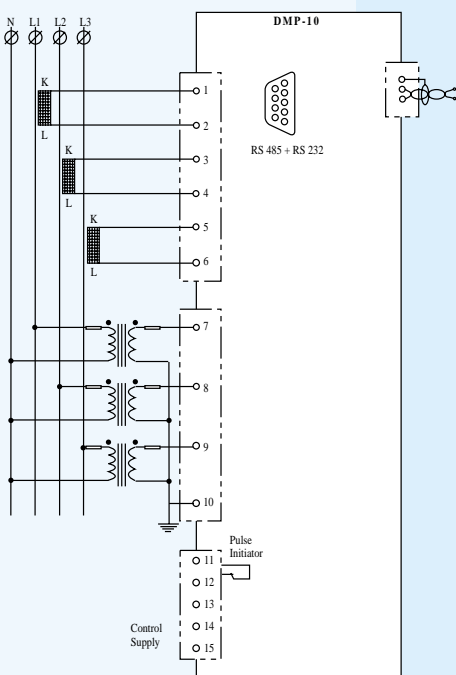
4 Wire System with 3 C/Ts (no P/Ts)



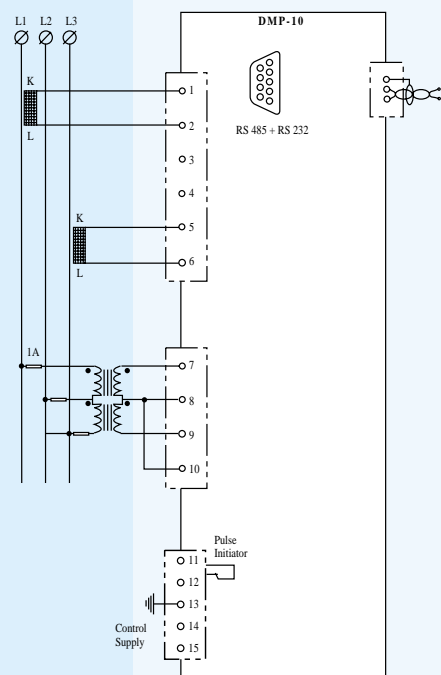
3 Wire System with 2 C/Ts



4 Wire Medium Voltage Y-System with 3 C/Ts and 3 P/Ts



3 Wire System with 2 C/Ts and 2 P/Ts



Communication

Hardware & Software

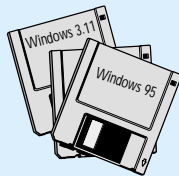
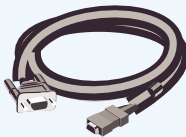
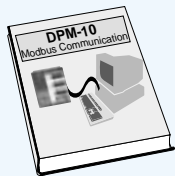
The DPM incorporates RS 232 and RS485 with MODBUS Protocol, operating at baud rates of up to 9600 bits/sec.

RS-232

For programming and supervision of single units via IBM-PC or compatible.

An optional communication package is available. The package includes:

- 1. Communication Manual
- 2. Communication cable - 2 meters
- 3. Windows based (3.11 & 95) software package



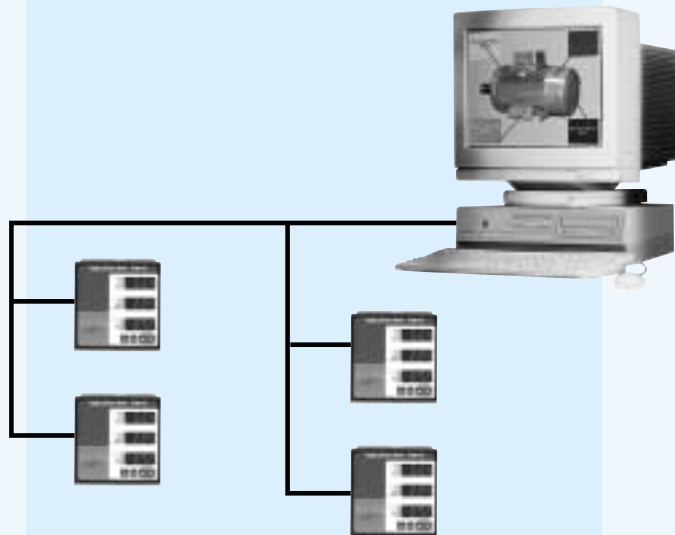
System Integration

RS-485

Serial link allows connection of up to 32 DPM's to the host computer. For detailed information see the Communication Manual.



Use any SCADA software to customize the displayed information.



When introduced into larger systems, a Data Highway may be used to enable multiple DPM-10 connections.

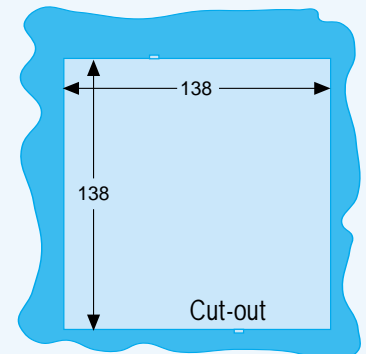
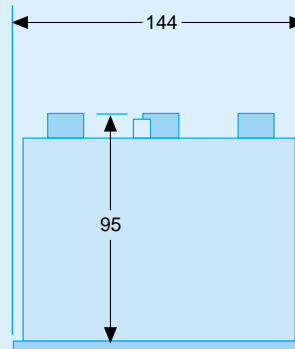
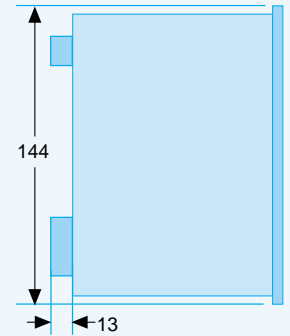
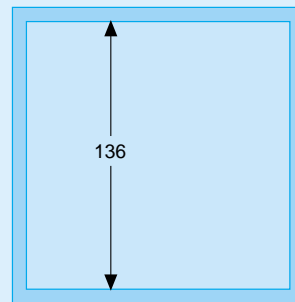
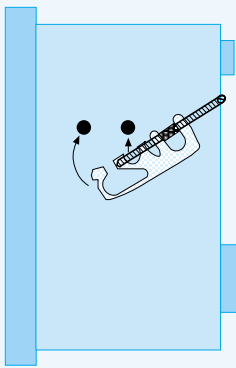
Up to 32 DPM's can be connected on a "twisted pair" numbering from 1 - 247.

Specifications

Technical Specifications

Auxiliary Power Supply	230VAC (160-270V) or 115VAC (80-135V), 45 to 65Hz, power consumption \leq 20VA
Voltage Measurement	Directly connected for systems up to 690V, P/T connected for higher voltages, power consumption \leq 1VA
Current Measurement	True RMS, sample time 0.5mSec. C/T secondary 5A or 1A, power consumption: \leq 0.5VA
KWH Pulse Relay	Programmable KWH per Pulse, Rated load: 8A/250VAC, 1800VA. 48Vdc, 0.25A Inductive 1.0A Resistive Maximum voltage: 250VAC, 125Vdc, 0.4A
Dielectric Strength	1500VAC for 1 minute, to Ground.
Temperature Range	0 - 60°C
Standards	Impulse: Meets IEC255-4 (1976) & Amend #1 (1979), Meets IEC255-5 (1977) 5 kV common-mode test, 5 kV transverse-mode test Surge withstand Oscillatory - 2.5 kV peak, Fast transient - 4 kV crest voltage In accordance with : ANSI C37.90.1 (1990), IEC55-4 (1976) & Amend # 1 (1979) Class III, IEC 255-22-2 (1988) Class III RFI : In accordance with EMI standard ANSI C37.90.2
Enclosure	Front panel mounting, synthetic, flame resistant, IP 50 front, IP 30 rear, IP20 Plug-in connections
Dimensions & Weight	144x144x75mm (cut-out 138x138mm), weight 1.3 Kg

Dimensions (mm)



Ordering Information

When ordering specify, for example: DPM-10 230 - 5 - 0 - S:

1. Control voltage (230 or 115VAC)
2. C/T ratio - 5 for 5A sec., 1 for 1A Sec.
3. Options (0 - no options)
4. Front panel

Additional Products

Additional catalogues available from Solcon's product range

RUS-DN
Low Voltage Digital Soft-Starter
8-2700A, 230-1000V



RUS-AX / RUS-DX
Analogue & Digital soft-starter



SOLSTART
Minimature soft-starter
For single & triple phase motors



RUS-BX / SEM-N
Basic electronic soft-starter
Basic electronic naval soft-starter



MPR 2000
Motor Protection Relay
Motor Protection Controller



MPC 2000
Motor Protection Relay
Motor Protection Controller



MPR 6
Motor Protection Relay



TPR 6
Temperature Protection Relay



DPM 10
Digital Power Meter



PFC 10
Reactive Power Factor Controller



SU 124
Generator Control & Protection



DGC 2000
Digital Generator Control & Protection



HTU
Restart Relay



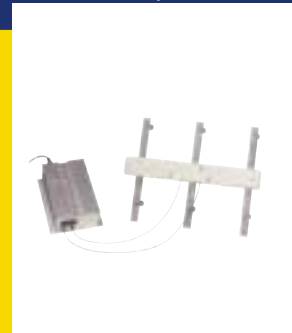
SMB
DC Injection brake



HRUS-DN
High Voltage Digital Soft-Starter



EPT
Electronic Potential Transformer
1000-14000V



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