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PentaMetric specifications and summary of functions

For battery systems from 12V to 48V (nominal).
  Measure 1 or 2 battery systems with common negative.
  With one battery system: battery current plus two charging sources/loads can be measured.
System consists of three components:
  1.data input unit to collect, process and log data (near batteries))
  2.optional readout unit with LCD display and control buttons
    Connect to input unit with 4 wires up to 1000 feet away.
  3.optional computer interface with software to control and read out all data.
  Data may be accessed and controlled with either (or both) 2 and 3.

Real Time Measurement capability
  ## Basic measurements:
  Volts (2 channels) . Accuracy ±0.1V. **Channel 1**: 8-70V. (also supplies meter power). **Channel 2**: 0-100 volts.
  Amps, (3 channels) ±.01-200 Amps (100A/100mV shunt).± 0.1-1000 Amps (500A/50mV shunt) Accuracy ±1.5%
  ±least sig. digit. **Optional with version 2.0 or greater:** Channel 1+2 can be summed to one amps reading for
  measuring two shunts for two battery strings in parallel for very large systems.
  Temperature (-20° C to +65° C). Requires optional temperature sensor TS-1 with 10 ft. cord.
  ## Secondary measurements derived from basic measurements
  Amp hour (3 channels) to ±83,000 Amp-hours
  Cumulative (negative) battery amp hours. (2 channels) to -1,000,000 amp-hours
      (To measure total cumulative "wear" of batteries)
  Smoothed (time filtered) Amps, with time constant of 0.5, 2 or 8 minutes (3 channels)
        ±.01-200 Amps (100A/100mV shunt).± 0.1-1000 Amps (500A/50mV shunt)
  Smoothed (time filtered) Volts, with time constant of 0.5, 2 or 8 minutes (2 channels) 0-100 Volts.
  Watts (2 channels: Volts1x Amps1, and Volts2 x Amps2)) ±.01- 20,000 watts
  Watt-hours (2 channels) ±21,000 kilowatt hours?
  Battery %full (2 channels) 0-100%
  Days since batteries charged (2 channels) .01-250 days
  Days since batteries equalized (2 channels) .01-250 days

Data logging functions. Memory can hold up to months of data, depending on how frequently and how many
        different data are collected. With computer interface these can be output to spreadsheet file.
  Log the following from once/day to up to once/minute: Use to confirm that charging systems or loads are performing
      normally.
    Amp hours (3 channels)
    Watt hours (2 channels)
    Temperature (min/max) (1 channel)
    Volts (2 channels)
    Amps (1 channel)
    Battery % Full (1 channel)

  Log battery discharge profile. Records volts and amps every time charge level changes by 5% (or 10%) This
      checks that battery capacity is still OK--.by observing that battery voltage does not decline excessively as charge
      level drops.
  **Log battery charge efficiency factor and average battery "self discharge" current for each charge/discharge
      cycle.** For each "charge/discharge" cycle: Records cycle length, total amp hours charged, total amp hours
      discharged, computed average "self discharge" current and charge (amp hour) efficiency.

Computer Interface options: There are three hardware options for accessing data via a computer. Only one of these
        may be connected at one time:
    1. RS232 connection for older style RS232 serial port **(Model PM-100-C)**
    2. USB connection **(Model PM-102-C)**
    3. Ethernet connection suitable for connection to TSP/IP **(Model PM-101-CE).**
                                        (OVER)

Relay output: Supplies voltage (at system voltage for relay coil) to turn relay on and off at specified voltage levels and/or %battery state of charge. Maximum current 1 Amp.

Audible and visual alarms: Audible or visual alarms for: "Low voltage or low state of charge", "High voltage", "battery is charged", "too many days since charged", "too many days since equalized"

Size. Input Unit and Display unit (equal sizes--including mounting flanges): 4-1/4 in x 6-1/2 x 1-3/4 (10.8 x 16.5 x 4.5 cm)   Computer interface: 4 x 2 x 1 in. (10 x 5.2 x 2.5 cm).

Power requirements.

  Input unit *only*: 0.5 watt.

  Input unit plus display unit: While display backlight bright: 1.5 watts. After display backlight dims : 1 watt.

  Computer interface power requirements:

    Internet (Ethernet) interface:

    RS232 interface:

    USB interface: