DEMS Demand Manager

Demand Response Solution

PM210-4 Demand Meter

DEMS Controller

Meter installed at a substation

INTRODUCTION

The DEMS demand manager is the ideal solution for energy managers to keep power demand under contractual demand limits.

The utility billing is basically derived from two part: the total kilowatt-hour fare and the maximum power demand charge. In many cases, the maximum demand cost share more than 30% of the total electricity bill. So reducing the demand cost and avoiding the over demand penalty are the first priority in energy cost control.

The over demand charge is based on the peak record of demand. This demand peaks occur when several electrical loads overlap operated at the same time period. The demand controller continuously monitors the load the of the main circuit breaker. Once the demand value exceeds the preset value, the preset non-essential loads will be switched off for a short period of time. This ensures that the maximum demand is always lower than the preset value to prevent the over demand penalty.

The DEMS package:

- DEMS Central Controller
- PM210A-4 Demand Meter (three phase 3/4 wire)
- Load Shedding Units (optional)

The demand meter is usually installed at the main circuit panel, while the DEMS is placed near the location of the operator and the entire system communicates through an RS485 bus.

DEMS Parameter Settings:

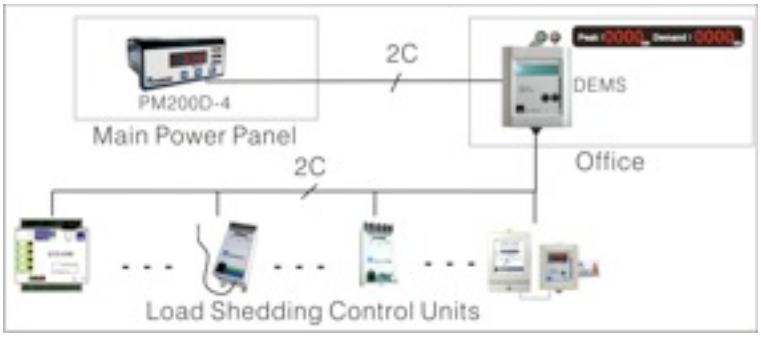
- Alert: load shedding will begin when the power load is higher than this value.
- Safety: load shedding will stop when the power load is lower than this value.

DEMS Load Shedding Modes:

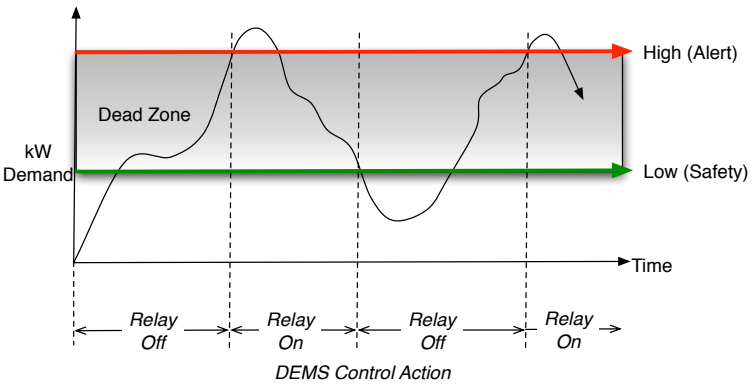
- Cyclic mode - each group of loads will be shed in turn.
- Priority mode - each group of loads is shed from lowest to highest priority

DEMS Monitoring and Control Functions:

- Current demand (1 minute demand)
- Peak demand (based on 15 minute demand average)
- kWh - the same value as seen from the PM210A-4 (may be reset to zero)
- Load shedding control is calculated by a sliding demand window, while the maximum demand register is based on a 15 minute block demand.
- The DEMS controller always sends a group on/off command and does not send individual on/off command.
- Built-in relay output synchronous with load shedding control actions.



System Diagram



Load Shedding State Diagram

Specifications

DEMS Controller Specification

- Wall mounted enclosure
- Built-in 1 A relay (for controlling external loads or driving an external horn)
- Built-in buzzer (for over-demand alert)
- Red (over) and Green (safe) alert lamps
- 2 line by 16 character LCD
- 2 buttons
- RS485 interface to communicate with the demand meter and load shedding devices
- Auxiliary power: 90 to 260 Vac through a power adaptor
- Maximum number of load shedding devices: 64
- Maximum number of groups: 8
- Control modes: Cyclic or Priority
- Dimensions: 150x110x35 mm

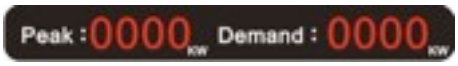
DEMAND METER

- Model: PM210-4
- Three Phase 3/4 Wire
- Input: 90 V_{ac} to 260 V_{ac}, 5 A
- Non-standard PM210A-4 with split core CTs available

Split Core CT

DISPLAY BOARD (option NRB-0302-10)

- Displays peak and current demand
- Dimensions: 128x17.5x5 cm (WxHxD)



SELECTION OF LOAD SHEDDING CONTROL UNITS (OPTIONAL)

Each load shedding control unit operates normally unless overridden by a load shedding command from the DEMS unit.

TYPE 1: LCU - HVAC Energy Limiter

- The LCU is designed to control the AC based on preset conditions (time and temperature)
- Normal local mode
  - with temperature limits
  - time band setting

TYPE 3: Revenue Meter with Smart Card Reader

- Selection of revenue meters:
  - DEM510C-2 - Single Phase Two Wire
  - DEM540C-2 - Three Phase Three Wire
  - DEM600C-2 - Three Phase Four Wire
- Each meter has dual RS485 communication ports, which allows each to be used both for prepaid metering and load shedding

TYPE 1: LT3504/LT3100 - 4 Channel Addressable Relays

- The LT3504/LT3100 is used for switching load circuits
- Channels: 4 latching relays
- Each relay can be part of a separate group
- On-board manual override relay control switch

DEM600C-2

DEM540C-2

DEM510C-2 with ICR815

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