SATEC
Powerful Solutions

APPLICATION NOTE:

AUTO PEAK SHAVING USING PM130EH PLUS

- Auto peak shaving (load shedding) using SATEC PM130EH PLUS
- Load shedding based on Maximum Demand (MD) or Time
- Save penalties and high energy cost usage
- Display of more than 120 electrical parameters
- Time synchronization

Control Your Load— Reduce Energy Cost

In today's world of high cost of electrical energy, it is often required to shed load to save cost of energy consumption. Load shedding may be resorted to avoid high penalties due to MD restrictions or high cost of electrical energy during peak hours.

Shedding un-essential load (e.g. utility water pumps, AC etc.) during peak energy cost time can result in significant saving in electrical bill.

Smart Multi-Function Meter SATEC PM130EH PLUS provides features which can be used to achieve both these cost saving requirements. It can be used to shed load based on MD and also at fixed time (peak energy cost time).

Panel mounted, four quadrants SATEC PM130EH PLUS displays all required electrical parameters with accuracy class 0.5S. Its RS-485 serial port can be used to read all required parameters via MODBUS RTU, DNP 3.0, Profibus DP or IEC 60870-5-101/4 protocols.

Plug-in module with four digital inputs (DI) and two relay outputs (RO) is available for use with the meter. This module is installed at side of the meter (please see the picture on right). Four DI can be used to monitor feeder status and time synchronization of the meter RTC (by using minute pulse input).

Two relay outputs can be used to control loads based on MD or time.

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Connect PM130EH PLUS for Load Control

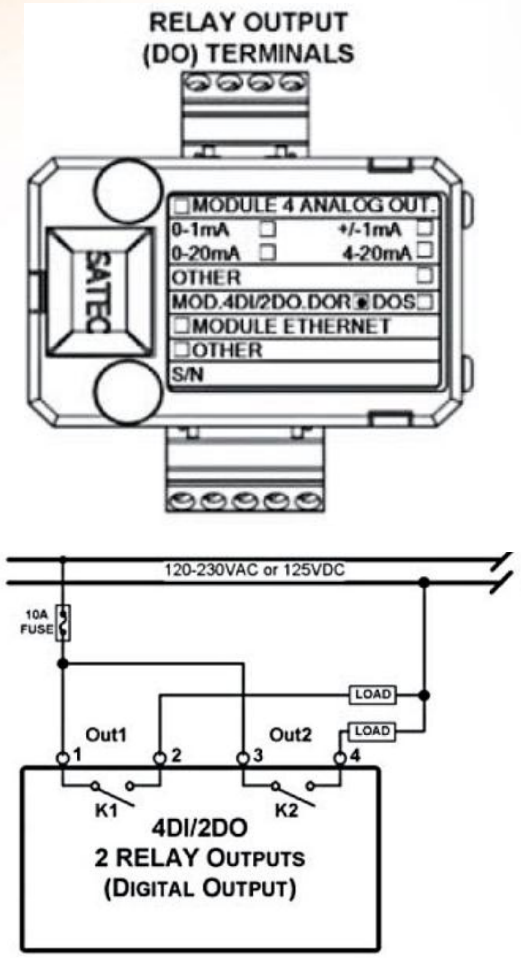

Figure 1: Relay control outputs for 4DI+2RO module

SATEC PM130EH PLUS
with plug-in load control module (4DI+2RO)

1. Connect the 4DI+2RO module to side of PM130EH PLUS
2. Make connections to the I/O module as shown in figure 1
3. Ensure that load does not exceed the output relay contact ratings
4. Use external load control relays if load exceeds the relay contact rating

Relay contact rating: 5A/250 VAC; 5A/30 VDC, 1 contact (SPST Form A)
Galvanic isolation: Between contacts and coil: 3000 VAC 1 min Between open contacts: 750V AC
Relay Operate time: 10 ms max.
Relay Release time: 5 ms max.

Configure PM130EH PLUS for MD Control

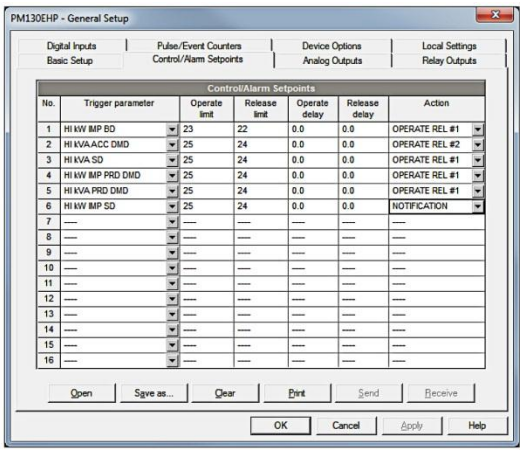

Figure 2: Configure PM130EH PLUS for MD control

PM130EH PLUS is supplied with PAS software which can be used for configuration of the meter. Meter can also be configured using its front panel keys.

The PM130EH PLUS can be configured for following types of demand control:

- Block demand
- Sliding Block demand
- Accumulated demand
- Predicted demand

Required operate and release demand limits can be configured under “Control/Alarm Set points” using PAS software as shown in figure 2.

Multiple levels of load shedding can be configured using the two output relays.

Notification for load shedding can also be generated via set points. Notification of load shedding shall be provided via flashing LED on the meter front panel and also on SCADA MMI screen via MODBUS notification register.

Configure PM130EH PLUS for Time Based Load Shedding

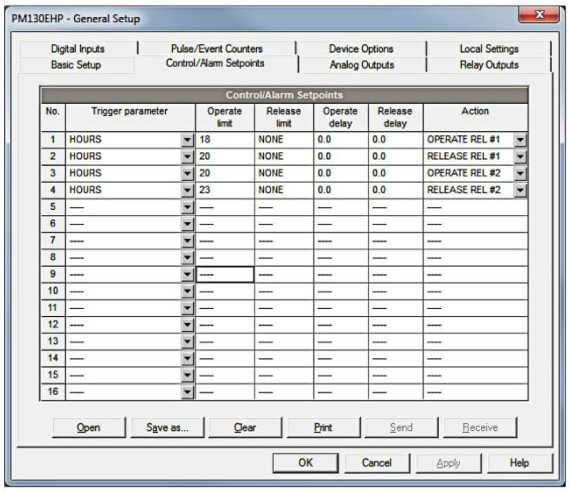

Figure 2:
Configure PM130EH PLUS for time based load shedding

Configuration screen for time based load shedding is shown in figure 2. Two output relays can be used for controlling two sets of loads.

Set load shedding time to operate the relay. Relay operation can be used to shed the load.

Similarly load shedding over time can be set to release the relay. This can be used to put on the load.

Multiple load shedding schedules can be configured using this Control/Alarm set point screen.

Meter RTC should be synchronized via MODBUS communication RS485 port or (DI using minutes pulse).

The scheme can result in significant saving in cost of electrical energy usage.

Add-On Modules Available with SATEC PM130EH PLUS (optional)

- 12DI4+DO
- Four Analog Outputs (4-20mA)
- TOU
- RS-232/RS-485 Communication Port
- Ethernet Communication Port
- Profibus Communication Port
- GPRS Modem
- RF (in certain regions only)

Communication Protocols Available with SATEC MFM PM130EH PLUS (optional)

- MODBUS RTU over serial
- MODBUS ASCII over serial
- MODBUS RTU over TCP/IP
- MODBUS ASCII over TCP/IP
- Profibus DP
- DNP3.0 over serial
- DNP3.0 over TCP/IP
- IEC-60870-101
- IEC-60870-104