**Bill of Material-60 KVA ONLINE UPS STACK -30 BATTERY  3IN-3OUT UNBALCE LOAD**
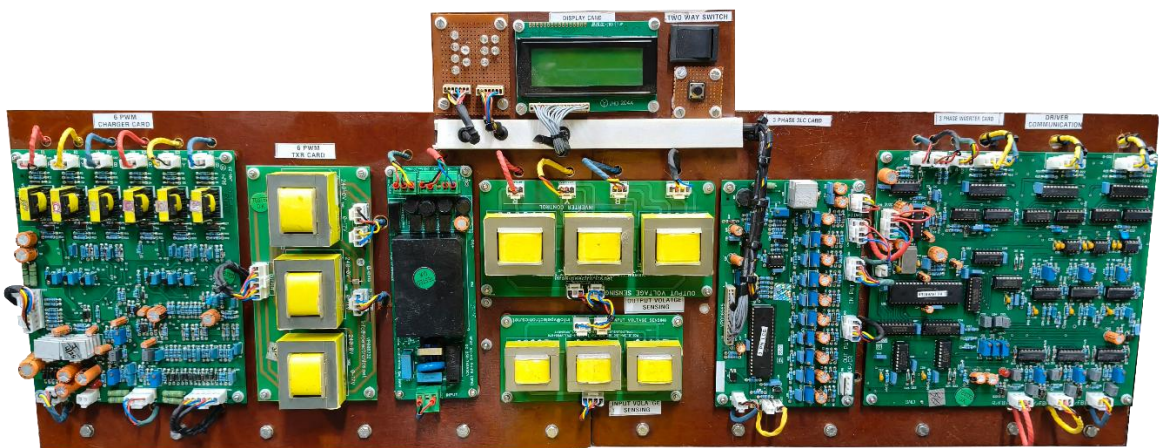
**WITH INVERTER & 6 PULSE CONTROL  CARD**

**Overall System Specification**

- **Product Designation:** 60 KVA Online UPS Stack

- **Configuration:** 3-Phase Input, 3-Phase Output (3IN-3OUT)

- **Key Features:**

  - Designed for unbalanced loads.

  - Includes an Inverter system.

  - Utilizes a 6-Pulse Control Card for the rectifier/charger.

  - Compatible with a 30-battery string.

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**Detailed Bill of Material (BoM) Specifications**

The system is built around a main power stack and includes a full set of control accessories.

**1. Main Power Stack Assembly: [VP003962] 6L_3P_INV_60K (STACK)**

This is the core power conversion unit. The "6L" likely refers to a 6-level or 6-IGBT bridge inverter topology.

| Component | VP Code | Description | Quantity | Key Specifications / Function |
|---|---|---|---|---|
| **IGBT Power Module** | [VP001027] | MMG200D120B6TC | 6 Units | High-power IGBT module. Likely rated for 300A, 1200V. Forms the main switching core of the inverter. |
| **Contactor** | [VP005110] | SKKT 162/16E | 3 Units | Heavy-duty 3-phase contactor, likely for output or bypass switching. |

| Component | VP Code | Description | Quantity | Key Specifications / Function |
|---|---|---|---|---|
| **Cooling Blower** | [VP002437] | BLOWER EBM NADI (D2E133-AM47-01) | 1 Unit | Forced-air cooling for the heatsink and power components. |
| **DC-Link Capacitor** | [VP006983] | 4700µF 450V DC KENDEIL (76X143) | 6 Units | Smooths the DC bus voltage. 4700µF, 450V rating. Large can size (76x143mm). |
| **DC Filter Capacitor** | [VP004376] | 1µF 1000V DC BOX DESAI (50gm) | 6 Units | Snubber or high-frequency filtering capacitor across IGBTs. |
| **Bleeder Resistor** | [VP001275] | 39K 11W Bleeder Resistance SR11J39K | 6 Units | Safety resistor to discharge the DC-link capacitors when the UPS is off. 39 kΩ, 11 Watt. |
| **Heatsink** | [VP005727] | 240X80X700MM AL HEATSINK | 1 Unit | Large aluminum heatsink (240mm x 80mm x 700mm) for dissipating heat from the 6 IGBT modules. |

## 2. Control & Accessory Set: [VP004133] FULL SET-3PH 6IGBT +6 PULSE CHARGER...

This is a comprehensive kit containing all the necessary electronic control cards and sensors for the stack.

| Included Items | Function |
|---|---|
| **Inverter Card** | Controls the IGBTs to generate the precise AC output waveform. |
| **Display Card** | Interfaces with the user display/interface. |
| **LCD** | The physical Liquid Crystal Display unit. |
| **High Cut Card** | Protects the system from overvoltage conditions. |
| **Multi Power Supply** | Provides various DC voltages required by the control circuits. |
| **6 Pulse Charger** | The rectifier/charger unit that converts AC input to DC, using a 6-pulse thyristor/IGBT bridge. |
| **Output Sensing Transformer PCB** | Measures output voltage and current for regulation and protection. |
| **Input Sensing Transformer PCB** | Measures input voltage and current. |
| **6 Pulse Sensing Transformer PCB** | Monitors the 6-pulse charger circuit. |
| **Shunt 200A** | A precision resistor for high-current measurement (likely up to 200A). |

## 3. Other Components

| Component | VP Code | Description | Quantity |
|---|---|---|---|
| **Harness/Wiring Loom** | [VP004138] | HARDNESS - ONLINE UPS STACK NEW | 1 |

| Component | VP Code | Description | Quantity |
|---|---|---|---|
| **DC-Link Capacitor (Duplicate)** | [VP006983] | 4700μF 450V DC KENDEIL (76X143) | 4 |

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**Summary of Key Technical Highlights**

- **Power Topology:** Utilizes a robust 6-IGBT module design for the inverter, capable of handling unbalanced 3-phase loads.

- **Charger Type:** Features a **6-Pulse Charger**, which is a standard, cost-effective design for this power range. (Note: A 12-pulse design is often used for better harmonic mitigation on the input side).

- **DC Bus:** A high-capacitance DC-link (10x 4700μF capacitors) ensures stable DC power for the inverter, especially during transients and power loss.

- **Cooling:** A dedicated high-performance blower and a large custom heatsink are used for thermal management of the high-power semiconductors.

- **Control System:** A fully digital control system is implied by the suite of specialized PCBs (Inverter, Sensing, Display cards) based on the UCC21750 gate driver IC.

This BoM describes a complete, industrial-grade 60 kVA Online UPS system designed for high reliability in demanding 3-phase environments.