## Features & Benefits

- Rugged Unit for Military Applications
- Input Voltage Range: 20-33 V
- 16 channels of 300 W output power
- EMI Filter Included
- Isolated Power Supply
- All Channels are isolated from each other
- Internal ORing Diode
- Droop Current Sharing
- Three Independent RS422 Communication Interfaces
- Temperature Sensor
- Input Under/Over Voltage Lockout
- Input Over Current Protection
- Output Over Voltage Protection
- Output Short Circuit Protection
- Over Temperature Protection
- Input Reverse Polarity Protection
- LED Indicators
- Forced Air Cooled
- Grounding Interface
- Input Circuit Breaker

## Compliance,

Module is compliant with:

- MIL-STD-461G
- MIL-STD-810G
- MIL-STD-1275E

## Typical Applications

- Military/Defense Power Systems
- Armored Vehicles
- Land Platforms
- Communications and Radar Systems

| **Product Ratings** | |
|---|---|
| $V_{IN}$ | 20–33 V |
| $V_{IN\_NOM}$ | 28 V |
| $V_{OUT}$ | 28 V (16 channel) |
| $I_{OUT\_CHANNEL}$ | 11 A (per channel) |
| $P_{OUT\_CHANNEL}$ | 300 W (per channel) |
| $P_{OUT\_TOTAL}$ | 4800 W |

## Product Description

KEU-PS456-001 is a rugged, multi-channel DC/DC power supply designed for demanding military applications. It operates from a wide 20–33 VDC input range (28 V nominal) and provides sixteen tightly regulated 28 V outputs.

Each output channel can deliver up to 11 A and 300 W, giving a total available output power of 4800 W. All 16 channels are galvanically isolated from the input and from each other, enabling flexible system architectures and improved fault containment.

Engineered for harsh environments, this isolated power supply supports a broad variety of military loads and incorporates comprehensive protection features against faults and electrical disturbances, ensuring reliable operation in the field.

Size: 390 x 390 x 237 mm
(excluding connectors and circuit breaker)

Weight: 40 ± 1 kg

## Unit Electrical Characteristics

The following value pertains to the unit.

All data are obtained at nominal line and full load unless otherwise specified. (Ta = 25 °C).

| Input Characteristics | | | | | |
|---|---|---|---|---|---|
| **Parameters** | **Notes & Conditions** | **Min** | **Typ** | **Max** | **Unit** |
| **Non-Operating Input Voltage Range** | Continuous | -33 | | 100 | V |
| **Input Voltage Transient** | 50 ms | | | 100 | V |
| **Operating Input Voltage Range** | | 20 | 28 | 33 | V |
| **Input Under Voltage Turn-On Threshold** | | 18 | 19 | 20 | V |
| **Input Under Voltage Turn-Off Threshold** | | 17 | 18 | 19 | V |
| **Input Over Voltage Turn-On Threshold** | | 38 | 39 | 40 | V |
| **Input Over Voltage Turn-Off Threshold** | | 40 | 41 | 42 | V |
| **No-Load Input Current** | | | | 10 | A |
| **Disabled Input Current** | | | | 1 | mA |
| **Input Current Ripple** | | | | 200 | mArms |
| **Maximum Input Current** | All channel %85 parallel load at low line* | | | 270 | A |
| **Inrush Current** | | | 50 | | A |

| General Characteristics | | | | | |
|---|---|---|---|---|---|
| **Parameters** | **Notes & Conditions** | **Min** | **Typ** | **Max** | **Unit** |
| **Efficiency** | All channels %85 parallel load* | 85 | | | % |
| **MTBF** | Ground Benign, 30°C Ta | | 79.5 | | $10^3$ Hrs. |
| | Ground Fixed, 40°C Ta | | 12.6 | | $10^3$ Hrs. |
| | Ground Mobile, 45°C Ta | | 4.1 | | $10^3$ Hrs. |

* A power reduction of approximately 15% occurs during parallel operation.

| Environmental Characteristics | | | | | | |
|---|---|---|---|---|---|---|
| **Parameters** | **Standard** | **Min** | **Typ** | **Max** | **Unit** | **Status** |
| **Operational Temperature** | MIL-STD-810G_CHG-1 Method 501.6/502.6 Procedure II | -32 | - | +49 | °C | Passed |
| **Storage / Transport Temperature** | MIL-STD-810G_CHG-1 Method 501.6/502.6 Procedure I | -33 | - | +63 | °C | Passed |
| **Operational Low Pressure** | MIL-STD-810G_CHG-1 Method 500.6 Procedure II | - | - | 3000 | m | Passed |
| **Parameters** | **Standard** | **Waveform** | **Peak Value** | **Pulse Duration** | **Axis** | **Status** |
| **Shock** | MIL-STD-810G_CHG-1 Method 516.7 Procedure I | Half-Sine | 10g | 11 ms | ±X, ±Y, ±Z | Passed |
| **Parameters** | **Standard** | **Category** | **Figure** | **Platform** | **Vehicle** | **Status** |
| **Vibration** | MIL-STD-810G_CHG-1 Method 514.7 Procedure I | Category 4 | 514.7C-2 | Trucks and Trailers | Truck Transportation | Passed |
| | | Category 8 | 514.7C-8 | Aircraft | Propeller | Passed |
| | | Category 11 | 514.7C-11 | Railroad | Train | Passed |
| | | Category 20 | 514.7C-4 | Ground | Wheeled Vehicles | Passed |
| | | Category 21 | 514.7D-9 | Watercraft | Marine Vehicles | Passed |
| **Parameters** | **Standard** | **Condition** | | | | **Status** |
| **Solar Radiation** | MIL-STD-810G_CHG-1 Method 505.6 Procedure I | A2 | | | | Passed |
| **Humidity** | MIL-STD-810G_CHG-1 Method 507.6 Procedure II | ≥ %95 Relative @30°C | | | | Passed |
| **Parameters** | **Standard** | **Test** | | | | **Status** |
| **EMI/EMC** | MIL-STD-461G Ground Army | CE102 | CS101<br>CS114<br>CS115<br>CS116<br>CS118 | RE102 | RS103 | Passed |

## Internal Architecture

KEU-PS456-001 rugged power supply consists of 16 channels, each capable of providing 300 W (4800 W total) of isolated power from main and switchable low-power outputs. The channels are identical (PN: KEU-VX247-001).

**Figure 1.** Internal Structure

## Channel Electrical Characteristics

The following values pertain to one of the 16 channels within the unit.

All data are obtained at nominal line and full load unless otherwise specified. (Ta = 25 °C).

| Input Characteristics | | | | | |
|---|---|---|---|---|---|
| **Parameters** | **Notes & Conditions** | **Min** | **Typ** | **Max** | **Unit** |
| **Non-Operating Input Voltage Range** | Continuous | -33 | | 50 | V |
| **Input Voltage Transient** | 50 ms | | | 50 | V |
| **Operating Input Voltage Range** | | 20 | 28 | 33 | V |
| **Input Under Voltage Turn-On Threshold** | | 16 | 17 | 18 | V |
| **Input Under Voltage Turn-Off Threshold** | | 14 | 15 | 16 | V |
| **Input Over Voltage Turn-On Threshold** | | 38 | 39 | 40 | V |
| **Input Over Voltage Turn-Off Threshold** | | 39 | 40 | 41 | V |
| **No-Load Input Current** | | | | 350 | mA |
| **Disabled Input Current** | | | | 40 | mA |
| **Input Current Ripple** | | | | 15 | mArms |
| **Input Reverse Polarity Leakage Current** | | | | 10 | mA |

| Output Characteristics | | | | | |
|---|---|---|---|---|---|
| **Parameters** | **Notes & Conditions** | **Min** | **Typ** | **Max** | **Unit** |
| **Output Voltage*** | No Load | | 29 | | V |
| | Full Load | | 28 | | V |
| **Output Voltage Set Point** | | | ± 1 | | % |
| **Output Voltage Line Regulation** | | | ± 1 | | % |
| **Output Voltage Load Regulation** | | | ± 5 | | % |
| **Output Voltage Adjust Range** | | | ± 10 | | % |
| **Output Voltage Ripple and Noise (pk-pk)** | 20 MHz bandwidth | | 280 | | mV |
| **Operating Output Current Range** | | 0 | | 10.7 | A |
| **Output Current Limit** | | 12 | | | A |
| **Output Current Shutdown Limit** | | | 15.5 | | A |
| **Output DC Current-Limit Shutdown Voltage** | | | 14 | | V |
| **Output Power** | | | 300 | | W |
| **Maximum Output Capacitance** | Nominal output voltage | | | 3 | mF |
| **Input Voltage Transient Response** | 50 V/ms | | | | |
| **Step Change** | From low line to high line | | 4 | | V |
| **Settling Time** | Within 1% output voltage | | 50 | | ms |
| **Load Current Transient Response** | 1 A/µs | | | | |
| **Step Change** | From half load to full load | | 1 | | V |
| **Settling Time** | Within 1% output voltage | | 50 | | ms |
| **Output Battery Leakage Current** | Output disabled | | | 10 | mA |
| **Output Over-Voltage Protection** | | | 33.6 | | V |

* Due to the droop current-sharing feature, there is a 1 V difference between no-load and full-load conditions.

| General Characteristics | | | | | |
|---|---|---|---|---|---|
| **Parameters** | **Notes & Conditions** | **Min** | **Typ** | **Max** | **Unit** |
| **Efficiency** | From half load to full load | 88 | | | % |
| **Turn-On Time** | Within 90% output voltage | | | 50 | ms |
| **Soft-Start Time** | Within 90% output voltage | | 10 | | ms |
| **Switching Frequency** | | | 150 | | kHz |
| **Over Temperature Shutdown Trip Point** | | | 125 | | °C |
| **Over Temperature Shutdown Hysteresis** | | | 20 | | °C |

| Isolation Characteristics | | | | | |
|---|---|---|---|---|---|
| **Parameters** | **Notes & Conditions** | **Min** | **Typ** | **Max** | **Unit** |
| **Isolation Voltage** | 60 s dwell, 1 mA trip current | | | | |
| **Input to Output** | | | 500 | | $V_{DC}$ |
| **Input to Chassis** | | | 100* | | $V_{DC}$ |
| **Output to Chassis** | | | 500 | | $V_{DC}$ |

**Note:** TVS devices with a 100 V reverse-standoff rating are installed for surge/lightning protection.

## Connector Configuration

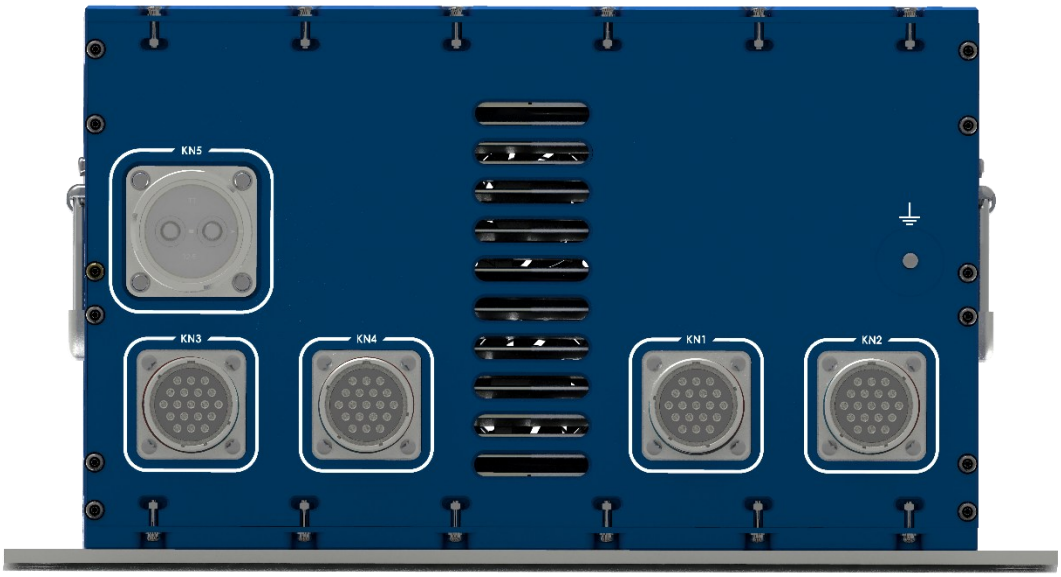


**Figure 2.** Connector Panel

## DC Output Connector #1 (KN1)

**Part Numbers:**

- D38999/20WJ19SN

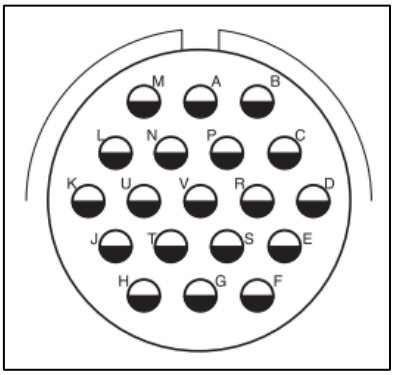


**Figure 3.** Output Connector View

| Pin | Signal Name | Function |
|---|---|---|
| **A** | DCOUT1 | DC Output |
| **B** | DCOUT1_RTN | DC Output Return |
| **C** | DCOUT2 | DC Output |
| **D** | DCOUT2_RTN | DC Output Return |
| **E** | DCOUT3 | DC Output |
| **F** | DCOUT3_RTN | DC Output Return |
| **G** | DCOUT4 | DC Output |
| **H** | DCOUT4_RTN | DC Output Return |
| **J** | DCOUT5 | DC Output |
| **K** | DCOUT5_RTN | DC Output Return |
| **L** | DCOUT6 | DC Output |
| **M** | DCOUT6_RTN | DC Output Return |
| **N** | DCOUT7 | DC Output |
| **P** | DCOUT7_RTN | DC Output Return |
| **R** | DCOUT8 | DC Output |
| **S** | DCOUT8_RTN | DC Output Return |
| **T** | - | |
| **U** | - | |
| **V** | - | |

## DC Output Connector #2 (KN3)

**Part Numbers:**

- D38999/20WJ19SB

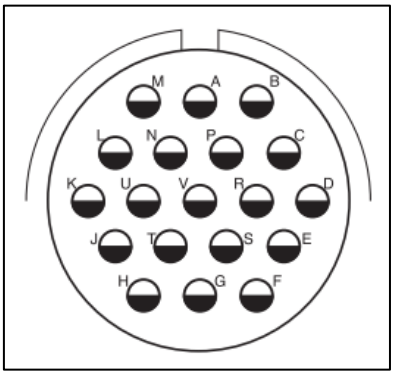


**Figure 4. Output** Connector **View**

| Pin | Signal Name | Function |
|---|---|---|
| **A** | DCOUT9 | DC Output |
| **B** | DCOUT9_RTN | DC Output Return |
| **C** | DCOUT10 | DC Output |
| **D** | DCOUT10_RTN | DC Output Return |
| **E** | DCOUT11 | DC Output |
| **F** | DCOUT11_RTN | DC Output Return |
| **G** | DCOUT12 | DC Output |
| **H** | DCOUT12_RTN | DC Output Return |
| **J** | DCOUT13 | DC Output |
| **K** | DCOUT13_RTN | DC Output Return |
| **L** | DCOUT14 | DC Output |
| **M** | DCOUT14_RTN | DC Output Return |
| **N** | DCOUT15 | DC Output |
| **P** | DCOUT15_RTN | DC Output Return |
| **R** | DCOUT16 | DC Output |
| **S** | DCOUT16_RTN | DC Output Return |
| **T** | - | |
| **U** | - | |
| **V** | - | |

## DC Input Connector (KN5)

**Part Numbers:**

- CA3102E32-5PB

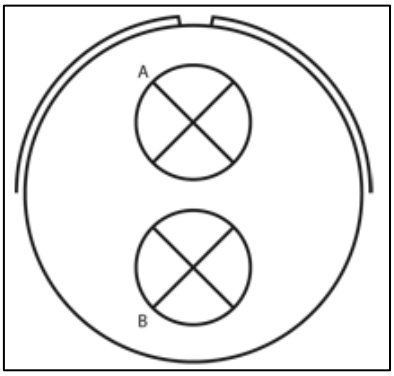


**Figure 5. Input Connector View**

| Pin | Signal Name | Function |
|---|---|---|
| **A** | DCIN | DC Input |
| **B** | DCIN_RTN | DC Input Return |

## DC Switched Output Connector #1 (KN2)

Do not connect (reserved for internal use).

## DC Switched Output Connector #2 (KN4)

Do not connect (reserved for internal use).

## Mechanical Drawings

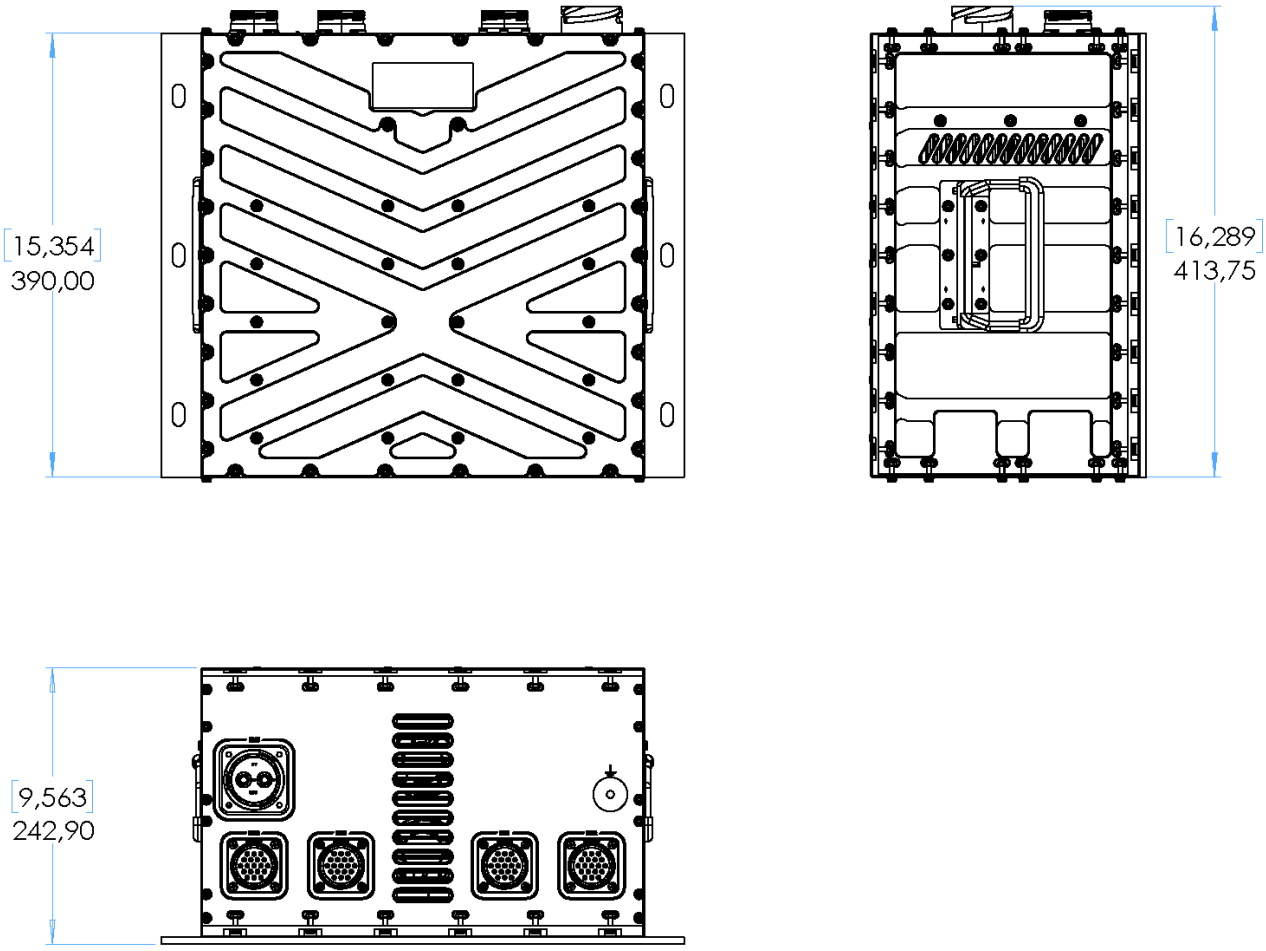


**Figure 6.** Mechanical Dimensions

**Material:** Aluminum Alloy 6061-T6

**Size:** 390 x 390 x 237 mm (excluding connectors and circuit breaker)

**Weight:** 40 ± 1 kg

Dimensions are in millimeters [inches].

## Assembly Interface Mechanical Drawings

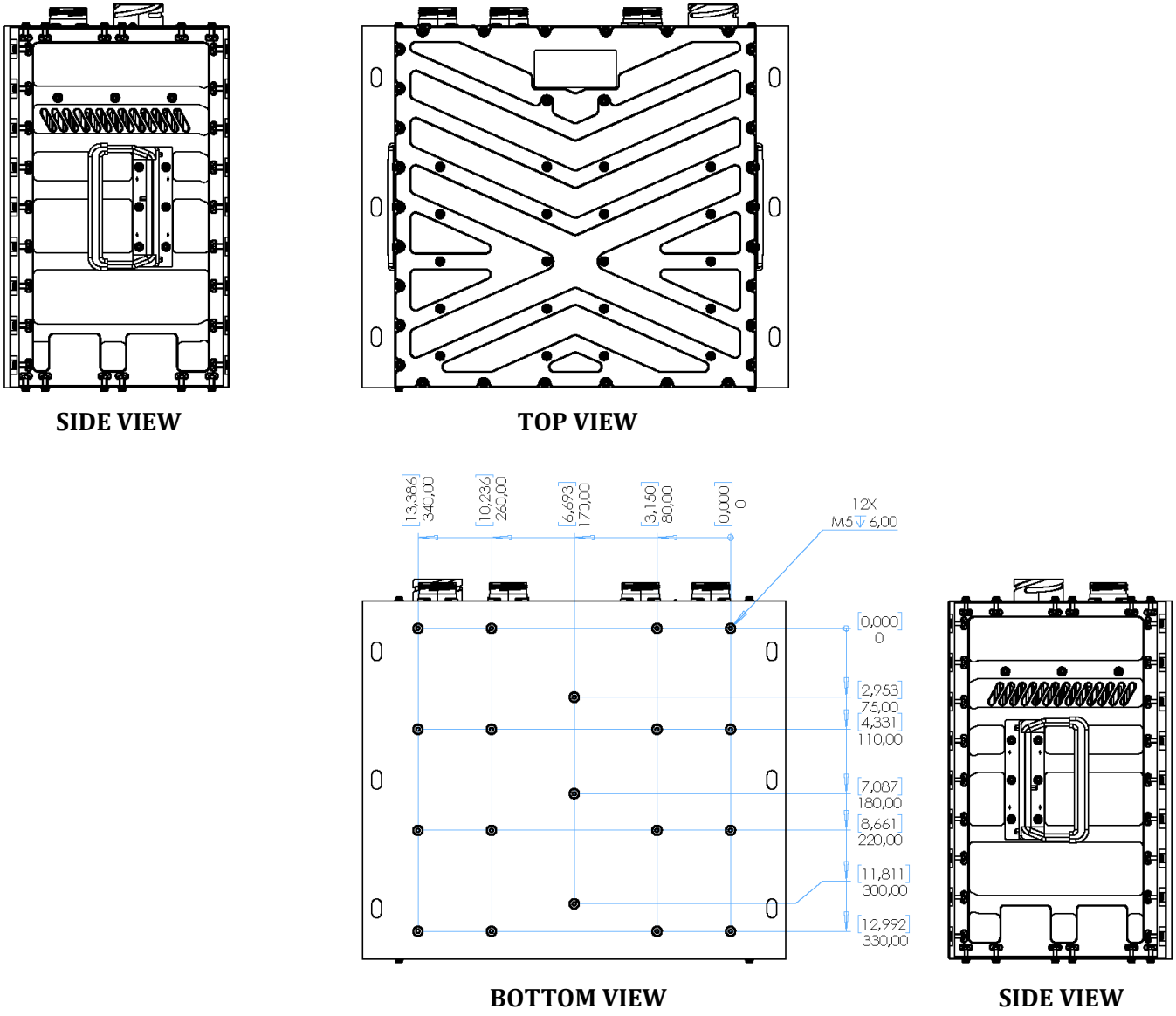


**Figure 7.** Mounting Details and Mounting Holes Coordinates

## Part Ordering Information

| Family | Product Variant | Option Variant |
|---|---|---|
| **KEU-PS456** | -001 | -XXX |

| Ordering Number | Option Variant |
|---|---|
| **KEU-PS456-001-001** | - |

## Revision History

| Document Number | Revision | Date | Description | Page Number(s) |
|---|---|---|---|---|
| **109410** | 01 | 21.10.2024 | Initial Release | - |
| **109410** | 02 | 26.03.2025 | Second Release | - |
| **109410** | 03 | 10.12.2025 | Part Number has been updated.<br>Detailed information has been added. | All |
| **109410** | 04 | 22.01.2026 | The blue color variant of the unit has been added.<br>The mechanical drawings pages have been updated. | 1,4,7,11,12 |

## Contact Us

**KOLT Türkiye**

salesturkiye@koltpower.com

KOLT Muhendislik A.S.

Serhat Mah. 1148. Sok.
No:1B/1 Yenimahalle, Ankara 06374

Türkiye

www.kolt.com.tr

**KOLT Europe**

saleseurope@koltpower.com

KOLT Power Ltd.

Fareham Innovation Centre Merlin House, 4 Meteor way,
Daedalus Drive, Fareham, Lee-On-Solent PO13 9FU

United Kingdom

www.koltpower.com

/company/koltpower