



## DC-DC CONVERTER 19" COMPATIBLE EUROCARD MULTI-OUTPUT 45-100 WATTS SWITCHING MODE POWER SUPPLIES HDU45, HDU60 & HDU100 SERIES



### FEATURES:

- 12/24/48VDC INPUT RANGE
- 19" COMPATIBLE EUROCARD FORMAT
- EMI MEET CISPR PUB. 22 & FCC CLASS B
- MEET THE SAFETY STANDARDS
- CE MARKING COMPLIANCE
- HDU45 3UX6HPX160MM VMEbus STANDARD
- HDU60 3UX8HPX160MM VMEbus STANDARD
- HDU100 3UX10HPX160MM VMEbus STANDARD

### SPECIFICATION

#### INPUT SPECIFICATION

**Input Voltage:** Three ranges option.

A Range: 9-18Vdc nominal 12Vdc.

B Range: 18-36Vdc nominal 24Vdc.

C Range: 36-72Vdc nominal 48Vdc.

**Input Connector:** DIN 41612 at rear.

**Input Current:**

HDU45-A: 8.0A, HDU45-B: 4.0A, HDU45-C: 2.5A.

HDU60-A: 10.0A, HDU60-B: 5.0A, HDU60-C: 3.15A.

HDU100-A: 15.0A, HDU100-B: 6.3A, HDU100-C: 4.0A.

**Dielectric Withstand:** Meet IEC 60950-1.

**EMI:** Meet CISPR PUB. 22 & FCC Class B.

**Power Fail Signal:** Installed.

**Remote (Logic) Inhibit:** Installed.

#### OUTPUT SPECIFICATION

**Output Voltage:** See Ratings Chart.

**Output Current:** See Ratings Chart.

**Output Wattage:** Typ. 45 Watts for HDU45.

Typ. 60 Watts for HDU60.

Typ. 100 Watts for HDU100.

**Output Connector:** DIN 41612 at rear.

**Line Regulation:** Typ. 0.4%.

**Load Regulation:** Main VO1 typ.  $\pm 1.0\%$ .

Aux. VO2 typ.  $\pm 2.0\%$ (PR).

$\pm 2.0\%$ (Mag. Amp.)

Aux. VO3 typ.  $\pm 2.0\%$  (PR).

Aux. VO4 typ.  $\pm 2.0\%$ (PR).

**Noise & Ripple:** Typ. 1% peak to peak.

**OVP:** Built-in at main VO1 (latch).

**Adjustability:** Available at main output VO1 and

Aux. Output VO2 (Mag. Amp.).

**Remote Sense:** Available at HDU60 & 100 single O/P.

**Overload Protection (OLP):** Fully protected against output overload and short circuit.

Consult the factory for OLP setting.

#### GENERAL SPECIFICATION

**Efficiency:** Typ. 70.0-75.0%.

**Switching Frequency:** Typ. 100K Hz.

**Circuit Topology:** Forward circuit.

**Transient Response:** Typ. 3mS following a 25% load change.

**Power Density:** 1.4 Watts / Cubic Inch for HDU45, HDU60.  
1.9 Watts /Cubic Inch for HDU100.

**Operating Temperature:** 0 to +50°C at full load.

Derates linearly to +70°C at half load.

**Storage Temperature:** -20 to +85°C.

**Temperature Coefficient:** Typ. 0.04% /°C.

**Cooling:** Free air convection.

**Construction:** 6,8,10 HP(TE)x3Ux160mm 19" compatible  
Eurocard VMEbus standard.

Note: Due to requests in market and advances in technology, specifications subject to change without notification.

## OUTPUT VOLTAGE / CURRENT RATINGS CHART

### HDU45 Series

#### SINGLE OUTPUT

| MODEL NO.              | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@◇ |       |
|------------------------|---------------------------|----------------|-------|
|                        |                           | Typ.           | Volt. |
| HDU45-A or B or C-S033 | A: 9-18,B: 18-36,C: 36-72 | 10.0A          | 3.3V  |
| HDU45-A or B or C-10   | A: 9-18,B: 18-36,C: 36-72 | 9.0A           | 5.0V  |
| HDU45-A or B or C-11   | A: 9-18,B: 18-36,C: 36-72 | 4.0A           | 12.0V |
| HDU45-A or B or C-12   | A: 9-18,B: 18-36,C: 36-72 | 3.0A           | 15.0V |
| HDU45-A or B or C-13   | A: 9-18,B: 18-36,C: 36-72 | 2.0A           | 24.0V |

#### DUAL OUTPUT

| MODEL NO.               | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@◇ |       | OUTPUT VO2 ●◇■ |       |
|-------------------------|---------------------------|----------------|-------|----------------|-------|
|                         |                           | Typ.           | Volt. | Typ.           | Volt. |
| HDU45-A or B or C-D033E | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 3.3V  | 4.0A           | 5.0V  |
| HDU45-A or B or C-D033I | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 3.3V  | 2.0A           | 12.0V |
| HDU45-A or B or C-20    | A: 9-18,B: 18-36,C: 36-72 | 4.0A           | 5.0V  | 2.0A           | 12.0V |
| HDU45-A or B or C-21    | A: 9-18,B: 18-36,C: 36-72 | 2.0A           | 12.0V | 2.0A           | 12.0V |
| HDU45-A or B or C-23    | A: 9-18,B: 18-36,C: 36-72 | 1.5A           | 15.0V | 1.5A           | 15.0V |
| HDU45-A or B or C-24    | A: 9-18,B: 18-36,C: 36-72 | 4.0A           | 5.0V  | 1.0A           | 24.0V |
| HDU45-A or B or C-25    | A: 9-18,B: 18-36,C: 36-72 | 1.0A           | 24.0V | 1.0A           | 24.0V |

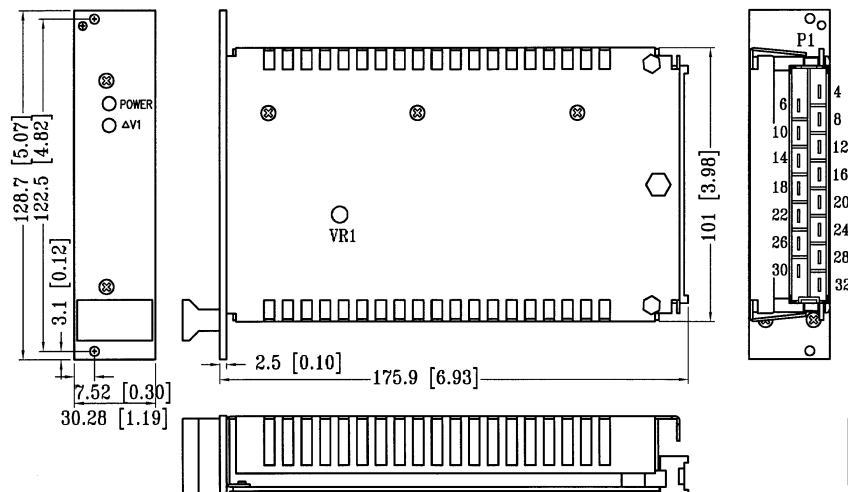
#### TRIPLE OUTPUT

| MODEL NO.                | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@◇ |       | OUTPUT VO2 ●◇■ |       | OUTPUT VO3 ●◇■ |       |
|--------------------------|---------------------------|----------------|-------|----------------|-------|----------------|-------|
|                          |                           | Typ.           | Volt. | Typ.           | Volt. | Typ.           | Volt. |
| HDU45-A or B or C-T033EI | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 3.3V  | 4.0A           | 5.0V  | 0.50A          | 12.0V |
| HDU45-A or B or C-T033IM | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 3.3V  | 2.0A           | 12.0V | 0.25A          | 24.0V |
| HDU45-A or B or C-30     | A: 9-18,B: 18-36,C: 36-72 | 3.0A           | 5.0V  | 2.0A           | 12.0V | 0.50A          | 5.0V  |
| HDU45-A or B or C-31     | A: 9-18,B: 18-36,C: 36-72 | 3.0A           | 5.0V  | 2.0A           | 15.0V | 0.50A          | 15.0V |
| HDU45-A or B or C-32     | A: 9-18,B: 18-36,C: 36-72 | 3.0A           | 5.0V  | 2.0A           | 12.0V | 0.50A          | 12.0V |
| HDU45-A or B or C-33     | A: 9-18,B: 18-36,C: 36-72 | 3.0A           | 5.0V  | 1.0A           | 24.0V | 0.50A          | 12.0V |

Symbol: "★"OVP built-in. "@Adjustable. "●" Installed with Post Regulator. "■" Couple filter inductor. "◇" Floating ( or isolated) output.

**MECHANICAL DIMENSIONS: MM [INCHES]**

**WEIGHT: HDU45 537.0g (18.94 Oz.)**



HDU45

#### INPUT & OUTPUT CONNECTORS PIN ASSIGNMENTS

| ASSIGNMENT | DC INPUT |      |    | SINGLE/DUAL/TRIPLE OUTPUT |       |      |      |      |      |                   | ASSORTED SIGNAL |    |    |            |
|------------|----------|------|----|---------------------------|-------|------|------|------|------|-------------------|-----------------|----|----|------------|
|            | +Vin     | -Vin | G  | +VO1                      | -VO1  | +VO2 | -VO2 | +VO3 | -VO3 | NC                | LOG. INH.       | +S | -S | POWER FAIL |
| HDU45-1X   | 28       | 30   | 32 | 4,6                       | 12,14 | -    | -    | -    | -    | 16,18,24,26       | 20              | 8  | 10 | 22         |
| HDU45-2X   | 28       | 30   | 32 | 4                         | 6     | 8    | 10   | -    | -    | 12,14,16,18,24,26 | 20              | -  | -  | 22         |
| HDU45-3X   | 28       | 30   | 32 | 4,6                       | 8,10  | 12   | 14   | 16   | 18   | 24,26             | 20              | -  | -  | 22         |

Mating connector: DIN41612-H15 Female

## OUTPUT VOLTAGE / CURRENT RATINGS CHART

### HDU60 Series

#### SINGLE OUTPUT

| MODEL NO.              | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@#◇ |       |
|------------------------|---------------------------|-----------------|-------|
|                        |                           | Typ.            | Volt. |
| HDU60-A or B or C-S033 | A: 9-18,B: 18-36,C: 36-72 | 16.0A           | 3.3V  |
| HDU60-A or B or C-10   | A: 9-18,B: 18-36,C: 36-72 | 12.0A           | 5.0V  |
| HDU60-A or B or C-11   | A: 9-18,B: 18-36,C: 36-72 | 5.0A            | 12.0V |
| HDU60-A or B or C-12   | A: 9-18,B: 18-36,C: 36-72 | 4.0A            | 15.0V |
| HDU60-A or B or C-13   | A: 9-18,B: 18-36,C: 36-72 | 2.5A            | 24.0V |

#### DUAL OUTPUT

| MODEL NO.               | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@◇ |       | OUTPUT VO2 ▲◇@ |       |
|-------------------------|---------------------------|----------------|-------|----------------|-------|
|                         |                           | Typ.           | Volt. | Typ.           | Volt. |
| HDU60-A or B or C-D033E | A: 9-18,B: 18-36,C: 36-72 | 6.0A           | 3.3V  | 5.0A           | 5.0V  |
| HDU60-A or B or C-D033I | A: 9-18,B: 18-36,C: 36-72 | 6.0A           | 3.3V  | 3.0A           | 12.0V |
| HDU60-A or B or C-20    | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 5.0V  | 3.0A           | 12.0V |
| HDU60-A or B or C-21    | A: 9-18,B: 18-36,C: 36-72 | 2.5A           | 12.0V | 2.5A           | 12.0V |
| HDU60-A or B or C-23    | A: 9-18,B: 18-36,C: 36-72 | 2.0A           | 15.0V | 2.0A           | 15.0V |
| HDU60-A or B or C-24    | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 5.0V  | 1.5A           | 24.0V |
| HDU60-A or B or C-25    | A: 9-18,B: 18-36,C: 36-72 | 1.3A           | 24.0V | 1.3A           | 24.0V |

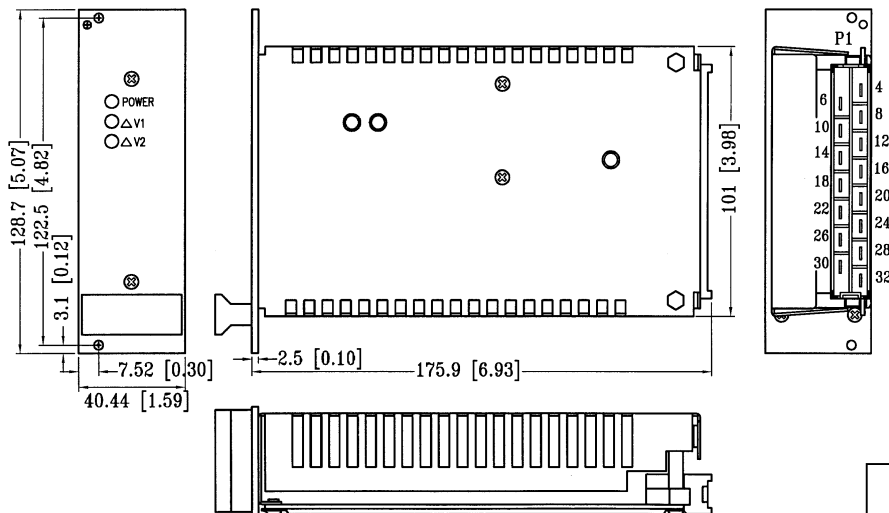
#### TRIPLE OUTPUT

| MODEL NO.                | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@◇ |       | OUTPUT VO2 ▲◇@ |       | OUTPUT VO3 ●◇■ |       |
|--------------------------|---------------------------|----------------|-------|----------------|-------|----------------|-------|
|                          |                           | Typ.           | Volt. | Typ.           | Volt. | Typ.           | Volt. |
| HDU60-A or B or C-T033EI | A: 9-18,B: 18-36,C: 36-72 | 6.0A           | 3.3V  | 5.0A           | 5.0V  | 0.50A          | 12.0V |
| HDU60-A or B or C-T033IM | A: 9-18,B: 18-36,C: 36-72 | 6.0A           | 3.3V  | 2.5A           | 12.0V | 0.25A          | 24.0V |
| HDU60-A or B or C-30     | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 5.0V  | 2.5A           | 12.0V | 1.00A          | 5.0V  |
| HDU60-A or B or C-31     | A: 9-18,B: 18-36,C: 36-72 | 4.5A           | 5.0V  | 2.0A           | 15.0V | 0.50A          | 15.0V |
| HDU60-A or B or C-32     | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 5.0V  | 2.5A           | 12.0V | 0.50A          | 12.0V |
| HDU60-A or B or C-33     | A: 9-18,B: 18-36,C: 36-72 | 5.0A           | 5.0V  | 1.3A           | 24.0V | 0.50A          | 12.0V |

Symbol: "★" OVP built-in. "@" Adjustable. "●" Installed with Post Regulator. "■" Couple filter inductor. "▲" Magnetic Amplifier.  
 "#" Remote sensing. "◇" Floating ( or isolated) output.

### MECHANICAL DIMENSIONS: MM [INCHES]

WEIGHT: HDU60 707.0g (24.94 Oz.)



### INPUT & OUTPUT CONNECTORS PIN ASSIGNMENTS

| ASSIGNMENT | DC INPUT |      |    | SINGLE/DUAL/TRIPLE OUTPUT |       |      |      |      |      |                   | ASSORTED SIGNAL |    |    |            |
|------------|----------|------|----|---------------------------|-------|------|------|------|------|-------------------|-----------------|----|----|------------|
|            | +Vin     | -Vin | G  | +VO1                      | -VO1  | +VO2 | -VO2 | +VO3 | -VO3 | NC                | LOG. INH.       | +S | -S | POWER FAIL |
| HDU60-1X   | 28       | 30   | 32 | 4,6                       | 12,14 | -    | -    | -    | -    | 16,18,24,26       | 20              | 8  | 10 | 22         |
| HDU60-2X   | 28       | 30   | 32 | 4                         | 6     | 8    | 10   | -    | -    | 12,14,16,18,24,26 | 20              | -  | -  | 22         |
| HDU60-3X   | 28       | 30   | 32 | 4,6                       | 8,10  | 12   | 14   | 16   | 18   | 24,26             | 20              | -  | -  | 22         |

Mating connector: DIN41612-H15 Female

## OUTPUT VOLTAGE / CURRENT RATINGS CHART

### HDU100 Series

#### SINGLE OUTPUT

| MODEL NO.               | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@#◇ |       |
|-------------------------|---------------------------|-----------------|-------|
|                         |                           | Typ.            | Volt. |
| HDU100-A or B or C-S033 | A: 9-18,B: 18-36,C: 36-72 | 25.0A           | 3.3V  |
| HDU100-A or B or C-10   | A: 9-18,B: 18-36,C: 36-72 | 20.0A           | 5.0V  |
| HDU100-A or B or C-11   | A: 9-18,B: 18-36,C: 36-72 | 8.5A            | 12.0V |
| HDU100-A or B or C-12   | A: 9-18,B: 18-36,C: 36-72 | 7.0A            | 15.0V |
| HDU100-A or B or C-13   | A: 9-18,B: 18-36,C: 36-72 | 4.5A            | 24.0V |

#### DUAL OUTPUT

| MODEL NO.                | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@◇ |       | OUTPUT VO2 ▲◇◇ |       |
|--------------------------|---------------------------|----------------|-------|----------------|-------|
|                          |                           | Typ.           | Volt. | Typ.           | Volt. |
| HDU100-A or B or C-D033E | A: 9-18,B: 18-36,C: 36-72 | 10.0A          | 3.3V  | 8.0A           | 5.0V  |
| HDU100-A or B or C-D033I | A: 9-18,B: 18-36,C: 36-72 | 10.0A          | 3.3V  | 5.0A           | 12.0V |
| HDU100-A or B or C-20    | A: 9-18,B: 18-36,C: 36-72 | 8.0A           | 5.0V  | 5.0A           | 12.0V |
| HDU100-A or B or C-21    | A: 9-18,B: 18-36,C: 36-72 | 4.2A           | 12.0V | 4.2A           | 12.0V |
| HDU100-A or B or C-23    | A: 9-18,B: 18-36,C: 36-72 | 3.4A           | 15.0V | 3.4A           | 15.0V |
| HDU100-A or B or C-24    | A: 9-18,B: 18-36,C: 36-72 | 8.0A           | 5.0V  | 2.5A           | 24.0V |
| HDU100-A or B or C-25    | A: 9-18,B: 18-36,C: 36-72 | 2.1A           | 24.0V | 2.1A           | 24.0V |

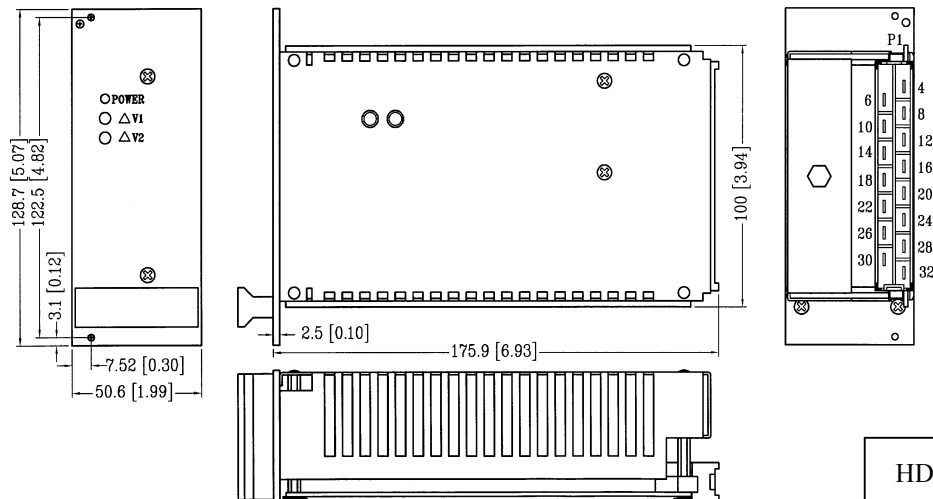
#### TRIPLE OUTPUT

| MDEL NO.                  | INPUT RANGE<br>Vdc        | OUTPUT VO1 ★@◇ |       | OUTPUT VO2 ▲◇@ |       | OUTPUT VO3 ●◇■ |       |
|---------------------------|---------------------------|----------------|-------|----------------|-------|----------------|-------|
|                           |                           | Typ.           | Volt. | Typ.           | Volt. | Typ.           | Volt. |
| HDU100-A or B or C-T033EI | A: 9-18,B: 18-36,C: 36-72 | 6.0A           | 3.3V  | 5.0A           | 5.0V  | 0.50A          | 12.0V |
| HDU100-A or B or C-T033IM | A: 9-18,B: 18-36,C: 36-72 | 6.0A           | 3.3V  | 2.5A           | 12.0V | 0.25A          | 24.0V |
| HDU100-A or B or C-30     | A: 9-18,B: 18-36,C: 36-72 | 7.0A           | 5.0V  | 5.0A           | 12.0V | 1.00A          | 5.0V  |
| HDU100-A or B or C-31     | A: 9-18,B: 18-36,C: 36-72 | 6.0A           | 5.0V  | 4.0A           | 15.0V | 0.60A          | 15.0V |
| HDU100-A or B or C-32     | A: 9-18,B: 18-36,C: 36-72 | 7.0A           | 5.0V  | 5.0A           | 12.0V | 0.50A          | 12.0V |
| HDU100-A or B or C-33     | A: 9-18,B: 18-36,C: 36-72 | 7.0A           | 5.0V  | 2.5A           | 24.0V | 0.50A          | 12.0V |

Symbol: "★" OVP built-in. "@" Adjustable. "●" Installed with Post Regulator. "■" Couple filter inductor. "▲" Magnetic Amplifier.  
 "#" Remote sensing. "◇" Floating ( or isolated) output.

### MECHANICAL DIMENSIONS: MM [INCHES]

WEIGHT: HDU100 943.0g (33.26 Oz.)



### INPUT & OUTPUT CONNECTORS PIN ASSIGNMENTS

|            | DC INPUT |      |    | SINGLE/DUAL/TRIPLE OUTPUT |       |      |      |      |      |                   | ASSORTED SIGNAL |    |    |            |
|------------|----------|------|----|---------------------------|-------|------|------|------|------|-------------------|-----------------|----|----|------------|
| ASSIGNMENT | +Vin     | -Vin | G  | +VO1                      | -VO1  | +VO2 | -VO2 | +VO3 | -VO3 | NC                | LOG. INH.       | +S | -S | POWER FAIL |
| HDU100-1X  | 28       | 30   | 32 | 4,6                       | 12,14 | -    | -    | -    | -    | 16,18,24,26       | 20              | 8  | 10 | 22         |
| HDU100-2X  | 28       | 30   | 32 | 4                         | 6     | 8    | 10   | -    | -    | 12,14,16,18,24,26 | 20              | -  | -  | 22         |
| HDU100-3X  | 28       | 30   | 32 | 4,6                       | 8,10  | 12   | 14   | 16   | 18   | 24,26             | 20              | -  | -  | 22         |

Mating connector: DIN41612-H15 Female