

### Dimension

| L                            | W | H |
|------------------------------|---|---|
| 325.8 * 107 * 41 (1U) mm     |   |   |
| 12.8 * 4.21 * 1.61 (1U) inch |   |   |



Front



Back



User's Manual



UL62368-1



BS EN/EN62368-1



TPTC004



IEC62368-1



EAC



CB



CE



UKCA



Industrial



Automate



Telecom



Network



EV



Marine

## Features

- Charger for lead-acid batteries (Gel, flooded and AGM) and Li-ion batteries (lithium iron and lithium manganese)
- Built-in default 3 stage charging curves and programmable curve
- Built-in I<sup>2</sup>C interface, PMBus protocol (Optional CANBus protocol)
- Universal AC input / Full range
- Built-in active PFC function
- Forced air cooling by built-in thermal controlled DC fans
- Output voltage and current programmable
- Built-in OR-ing FET
- Active current sharing up to 6400W(1+1)
- Protections: Battery under voltage / Battery no connection / Short circuit / Over voltage / Over temperature
- Optional conformal coating
- 5 years warranty

## Description

DBU-3200 is a 3200W single output AC/DC enclosed charger in 1U low profile with high power density, 37W/inch<sup>3</sup>. It is an intelligent charger that has pre-loaded programmable charging curves for different types of lead-acid and li-ion batteries. Output programmable function allows user to adjust the charging voltage and current via the built-in potentiometer or PMBus protocol. Various protection mechanisms as well as the temperature compensation function are provided to assure normal and safe system operation.

## Model Encoding / Order Information

**DBU - 3200 - 24**

- Communication protocol option
- Output voltage(24V/48V)
- Output wattage
- Series name

| Type  | Communication Protocol | Note       |
|-------|------------------------|------------|
| Blank | PMBus protocol         | In Stock   |
| CAN   | CANBus protocol        | By request |

## Applications

- Large scale DC UPS or emergency backup system
- Marine battery charger module
- Electric scooter or vehicle charger station
- Wastewater treatment system
- Electrolysis system

## GTIN CODE

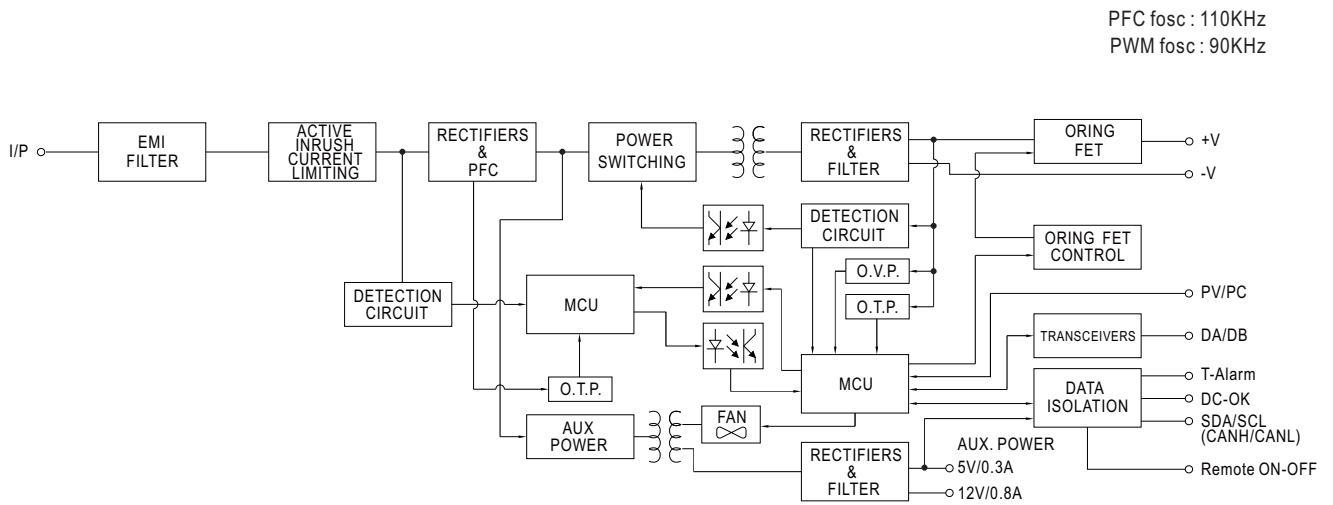
MW Search: <https://www.meanwell.com/serviceGTIN.aspx>



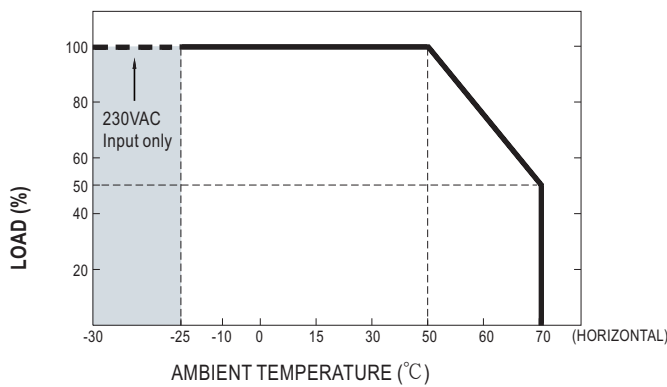
## SPECIFICATION

| MODEL                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | DBU-3200-24                                                                                                            |                         | DBU-3200-48  |                                                                          |  |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------|--------------------------------------------------------------------------|--|
| OUTPUT                              | BOOST CHARGE VOLTAGE(Vboost)(default)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 28.8V                                                                                                                  |                         | 57.6V        |                                                                          |  |
|                                     | FLOAT CHARGE VOLTAGE(Vfloat)(default)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 27.6V                                                                                                                  |                         | 55.2V        |                                                                          |  |
|                                     | CONSTANT CURRENT(CC)(default)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 110A                                                                                                                   |                         | 55A          |                                                                          |  |
|                                     | VOLTAGE ADJ. RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | By built-in potentiometer, SVR                                                                                         |                         |              |                                                                          |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 23.5 ~ 30V                                                                                                             |                         | 47.5 ~ 58.8V |                                                                          |  |
|                                     | RECOMMENDED BATTERY CAPACITY(AMP HOURS) <small>Note.3</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 330 ~ 1000Ah                                                                                                           |                         | 180 ~ 550Ah  |                                                                          |  |
| LEAKAGE CURRENT FROM BATTERY (Typ.) | 1.5mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                        |                         |              |                                                                          |  |
| INPUT                               | VOLTAGE RANGE <small>Note.4</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 90 ~ 264VAC    127 ~ 370VDC                                                                                            |                         |              |                                                                          |  |
|                                     | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 47 ~ 63Hz                                                                                                              |                         |              |                                                                          |  |
|                                     | POWER FACTOR (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.97/230VAC at full load                                                                                               |                         |              |                                                                          |  |
|                                     | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 93.5%                                                                                                                  |                         | 94.5%        |                                                                          |  |
|                                     | AC CURRENT (Typ.) <small>Note.4</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 17A/230VAC                                                                                                             |                         |              |                                                                          |  |
|                                     | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | COLD START 55A/230VAC                                                                                                  |                         |              |                                                                          |  |
|                                     | LEAKAGE CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <2mA / 230VAC                                                                                                          |                         |              |                                                                          |  |
| PROTECTION                          | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 31.5 ~ 37.5V                                                                                                           |                         | 63 ~ 75V     |                                                                          |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Protection type : Shut down o/p voltage, re-power on to recover                                                        |                         |              |                                                                          |  |
|                                     | OVER TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Shut down o/p voltage, recovers automatically after temperature goes down                                              |                         |              |                                                                          |  |
| FUNCTION                            | OUTPUT VOLTAGE PROGRAMMABLE(PV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Adjustment of output voltage is allowable to 75 ~ 125% of nominal output voltage. Please refer to the Function Manual. |                         |              |                                                                          |  |
|                                     | OUTPUT CURRENT PROGRAMMABLE(PC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Adjustment of output voltage is allowable to 20 ~ 100% of rated current. Please refer to the Function Manual.          |                         |              |                                                                          |  |
|                                     | AUXILIARY POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5V @ 0.3A, tolerance $\pm 10\%$ , ripple 150mVp-p, 12V @ 0.8A, tolerance $\pm 10\%$ , ripple 450mVp-p                  |                         |              |                                                                          |  |
|                                     | REMOTE ON-OFF CONTROL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | By electrical signal or dry contact    Power ON:short    Power OFF:open. Please refer to the Function Manual           |                         |              |                                                                          |  |
|                                     | TEMPERATURE COMPENSATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -3mV / $^{\circ}\text{C}$ / cell / (12V = 6 cells ; 24V = 12 cells ; 48V = 24 cells)                                   |                         |              |                                                                          |  |
|                                     | ALARM SIGNAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Isolated signal output for T-alarm and DC-OK                                                                           |                         |              |                                                                          |  |
| ENVIRONMENT                         | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | -30 ~ +70 $^{\circ}\text{C}$ (Refer to "Derating Curve")                                                               |                         |              |                                                                          |  |
|                                     | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20 ~ 90% RH non-condensing                                                                                             |                         |              |                                                                          |  |
|                                     | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | -40 ~ +85 $^{\circ}\text{C}$ , 10 ~ 95% RH non-condensing                                                              |                         |              |                                                                          |  |
|                                     | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | $\pm 0.03\%/^{\circ}\text{C}$ (0 ~ 50 $^{\circ}\text{C}$ )                                                             |                         |              |                                                                          |  |
|                                     | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes                                                           |                         |              |                                                                          |  |
| SAFETY & EMC<br>(Note 6)            | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | UL62368-1, CSA C22.2 No. 62368-1, TUV BS EN/EN62368-1, EAC TP TC 004 approved                                          |                         |              |                                                                          |  |
|                                     | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | I/P-O/P:3KVAC    I/P-FG:2KVAC    O/P-FG:1.5KVAC                                                                        |                         |              |                                                                          |  |
|                                     | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25 $^{\circ}\text{C}$ / 70% RH                                            |                         |              |                                                                          |  |
|                                     | EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Parameter                                                                                                              | Standard                |              | Test Level / Note                                                        |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Conducted                                                                                                              | BS EN/EN55032 (CISPR32) |              | Class B                                                                  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Radiated                                                                                                               | BS EN/EN55032 (CISPR32) |              | Class A                                                                  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Harmonic Current                                                                                                       | BS EN/EN61000-3-2       |              | Class A                                                                  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Voltage Flicker                                                                                                        | BS EN/EN61000-3-3       |              | -----                                                                    |  |
|                                     | EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | BS EN/EN55035, BS EN/EN61000-6-2                                                                                       |                         |              |                                                                          |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Parameter                                                                                                              | Standard                |              | Test Level / Note                                                        |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ESD                                                                                                                    | BS EN/EN61000-4-2       |              | Level 3, 8KV air ; Level 2, 4KV contact                                  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Radiated                                                                                                               | BS EN/EN61000-4-3       |              | Level 3                                                                  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | EFT / Burst                                                                                                            | BS EN/EN61000-4-4       |              | Level 3                                                                  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Surge                                                                                                                  | BS EN/EN61000-4-5       |              | 2KV/Line-Line 4KV/Line-Earth                                             |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Conducted                                                                                                              | BS EN/EN61000-4-6       |              | Level 3                                                                  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Magnetic Field                                                                                                         | BS EN/EN61000-4-8       |              | Level 4                                                                  |  |
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Voltage Dips and Interruptions                                                                                         | BS EN/EN61000-4-11      |              | >95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods |  |
| OTHERS                              | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 494.2K hrs min.    Telcordia SR-332 (Bellcore) ; 44.8K hrs min.    MIL-HDBK-217F (25 $^{\circ}\text{C}$ )              |                         |              |                                                                          |  |
|                                     | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 325.8*107*41mm (L*W*H)                                                                                                 |                         |              |                                                                          |  |
|                                     | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2.76Kg;4pcs/12Kg/0.83CUFT                                                                                              |                         |              |                                                                          |  |
| NOTE                                | 1. Modification for charger specification may be required for different battery specification. Please contact battery vendor and MEAN WELL for details.<br>2. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25 $^{\circ}\text{C}$ of ambient temperature.<br>3. This is MEAN WELL's suggested range. Please consult your battery manufacturer for their suggestions about maximum charging current limitation.<br>4. Derating may be needed under low input voltages. Please check the derating curve for more details.<br>5. The charger is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 600mm*900mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies."<br>(as available on <a href="https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf">https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf</a> )<br>6. The ambient temperature derating of 3.5 $^{\circ}\text{C}$ /1000m with fanless models and of 5 $^{\circ}\text{C}$ /1000m with fan models for operating altitude higher than 2000m(6500ft).<br>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a> |                                                                                                                        |                         |              |                                                                          |  |

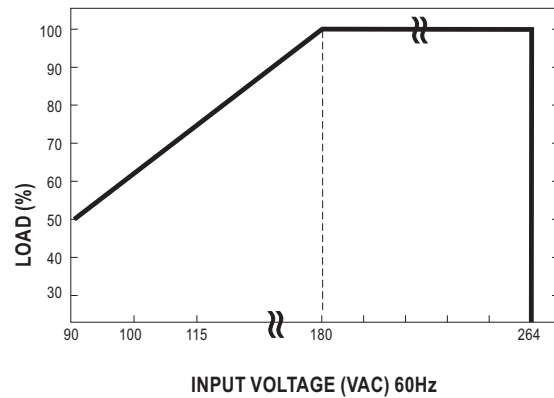
## ■ BLOCK DIAGRAM



## ■ DERATING CURVE



## ■ STATIC CHARACTERISTICS



## FUNCTION MANUAL

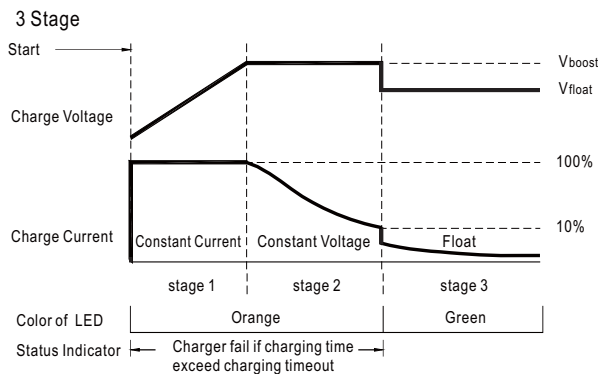
### 1. PMBus Communication Interface

DBU-3200 supports PMBus Rev. 1.1 with maximum 100KHz bus speed, allowing information reading, status monitoring, output trimming, etc. For details, please refer to the Installation Manual.

### 2. Charging Curve

- ✘ By factory default, this charger performs the default curve which can be programmed via PMBus.
- ✘ To disable / enable the charging curve, change to a 2 stage curve, a different curve frequently used for certain types of batteries in the industry, and so on, please refer to the Installation Manual.
- ✘ To program the parameters of the charging curve, SBP-001, the smart battery charging programmer designed by MEAN WELL, and a personal computer are needed. Please contact MEAN WELL for details.

#### ⊙ Default 3 stage charging curve



- ⊙ Suitable for lead-acid batteries (flooded, Gel and AGM) and Li-ion batteries (lithium iron and lithium manganese).

#### ⊙ Embedded 3 stage charging curves

| MODEL | Description                  | Vboost | Vfloat | CC(default) |
|-------|------------------------------|--------|--------|-------------|
| 24V   | Default, programmable        | 28.8   | 27.6   | 110A        |
|       | Pre-defined, gel batter      | 28     | 27.2   |             |
|       | Pre-defined, flooded battery | 28.4   | 26.8   |             |
|       | Pre-defined, AGM battery     | 29     | 27     |             |
| 48V   | Default, programmable        | 57.6   | 55.2   | 55A         |
|       | Pre-defined, gel batter      | 56     | 54.4   |             |
|       | Pre-defined, flooded battery | 56.8   | 53.6   |             |
|       | Pre-defined, AGM battery     | 58     | 54     |             |

Note:

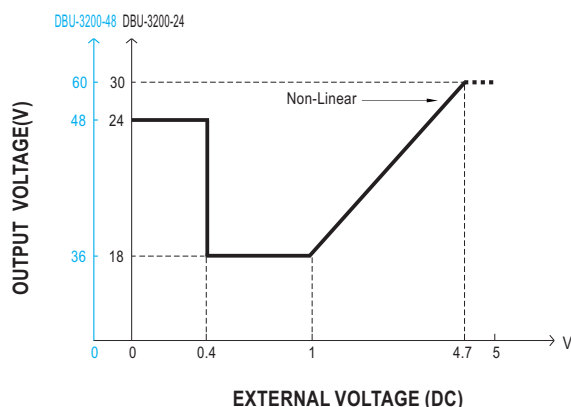
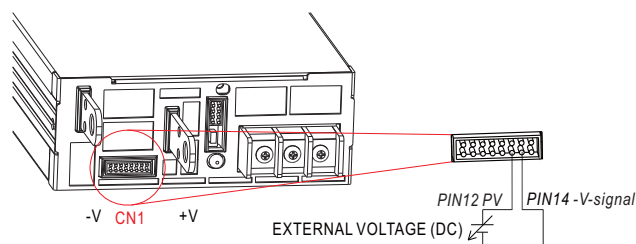
When using this charger unit, please configured the system with recommended battery capacity defined by specification. Should battery capacity in use be much smaller so that user needs to set a low current for charging, under such condition it might cause higher current ripple.

### 3. Front Panel LED Indicators & Corresponding Signal at Function Pins

| LED            | Description                                                                                                                                                                                                                                     |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Green          | Float (stage 3)                                                                                                                                                                                                                                 |
| Orange         | Charging (stage 1 or stage 2)                                                                                                                                                                                                                   |
| Red            | The LED will present a constant red light when the abnormal status (OTP, OLP, fan fail and charging timeout) arises.                                                                                                                            |
| Red (Flashing) | The LED will flash with the red light when the internal temperature reaches 60°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus interface.) |

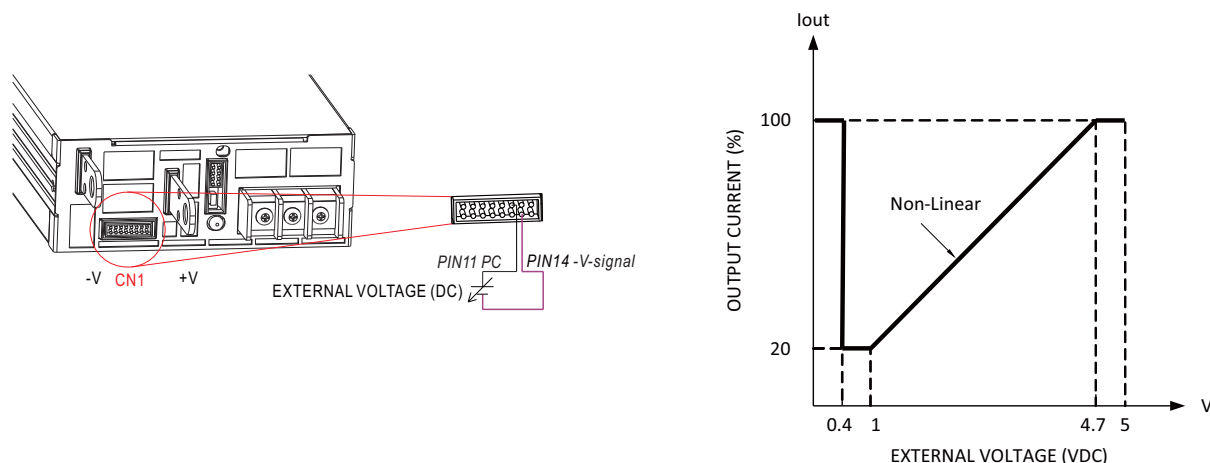
### 4. Output Voltage Programming (or, PV / remote voltage programming / remote adjust / margin programming / dynamic voltage trim)

- ✘ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE.



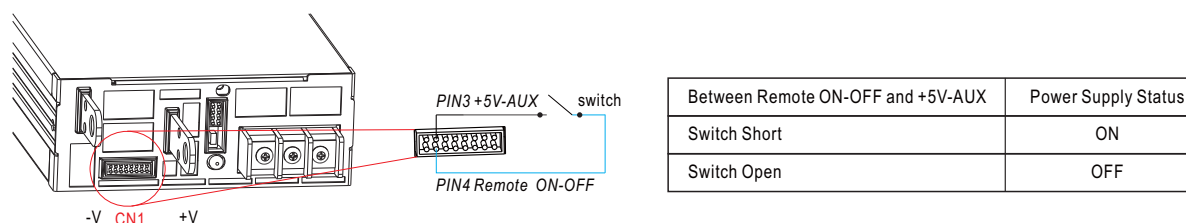
## 5. Output Current Programming (or, PC / remote current programming / dynamic current trim)

※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.

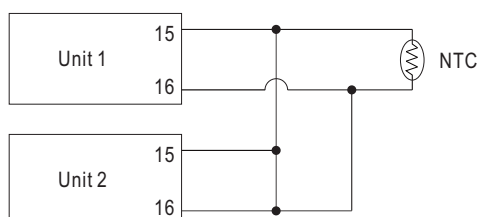
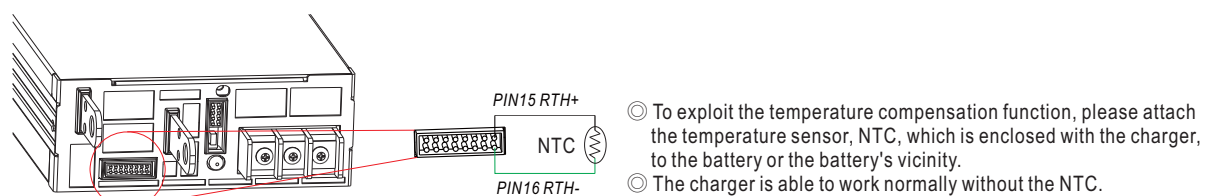


## 6. Remote ON-OFF Control

The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function.



## 7. Temperature Compensation

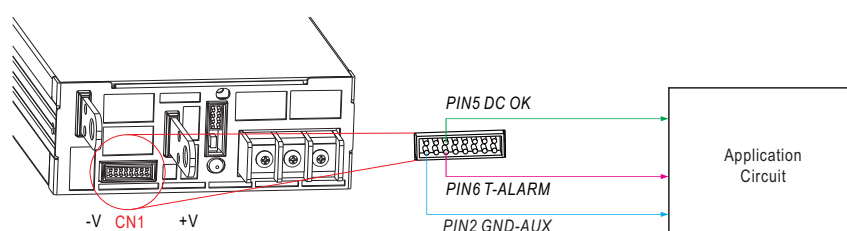


When multiple chargers are connected in parallel, please configure with the NTC as exhibited in the diagram .

If the temperature compensation is not required, RTH+ (PIN15) and RTH- (PIN16) from each unit still need to be connected.

## 8. Alarm Signal Output

※ There are 2 alarm signals, DC OK and T-ALARM, in TTL signal form, on CN1. These signals are isolated from output. The maximum sink current is 10mA.



### 9. Current Sharing

DBU-3200 has the built-in active current sharing function and can be connected in parallel, up to 2 units, to provide higher output power as exhibited below :

※ The power supplies to be paralleled should use short and large diameter wiring and then connected to the load.

※ Difference of output voltages among parallel units should be less than 0.2V.

※ The total output current must not exceed the value calculated by the following equation:

Maximum output current at parallel operation = (Rated current per unit) × (Number of unit) × 0.9

※ When the total output current is less than 5% of the total rated current, or say (5% of Rated current per unit) × (Number of unit) the current shared among units may not be balanced.

※ CN500/SW1 Function pin connection

| Parallel | PSU1  |     | PSU2  |     |
|----------|-------|-----|-------|-----|
|          | CN500 | SW1 | CN500 | SW1 |
| 1 unit   | X     | ON  | —     | —   |
| 2 unit   | V     | ON  | V     | ON  |

(V : CN500 connected ; X : CN500 not connected.)

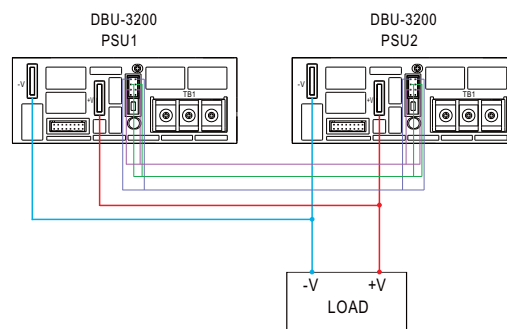
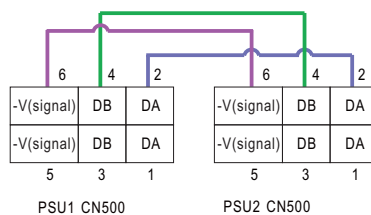


Fig 5.1



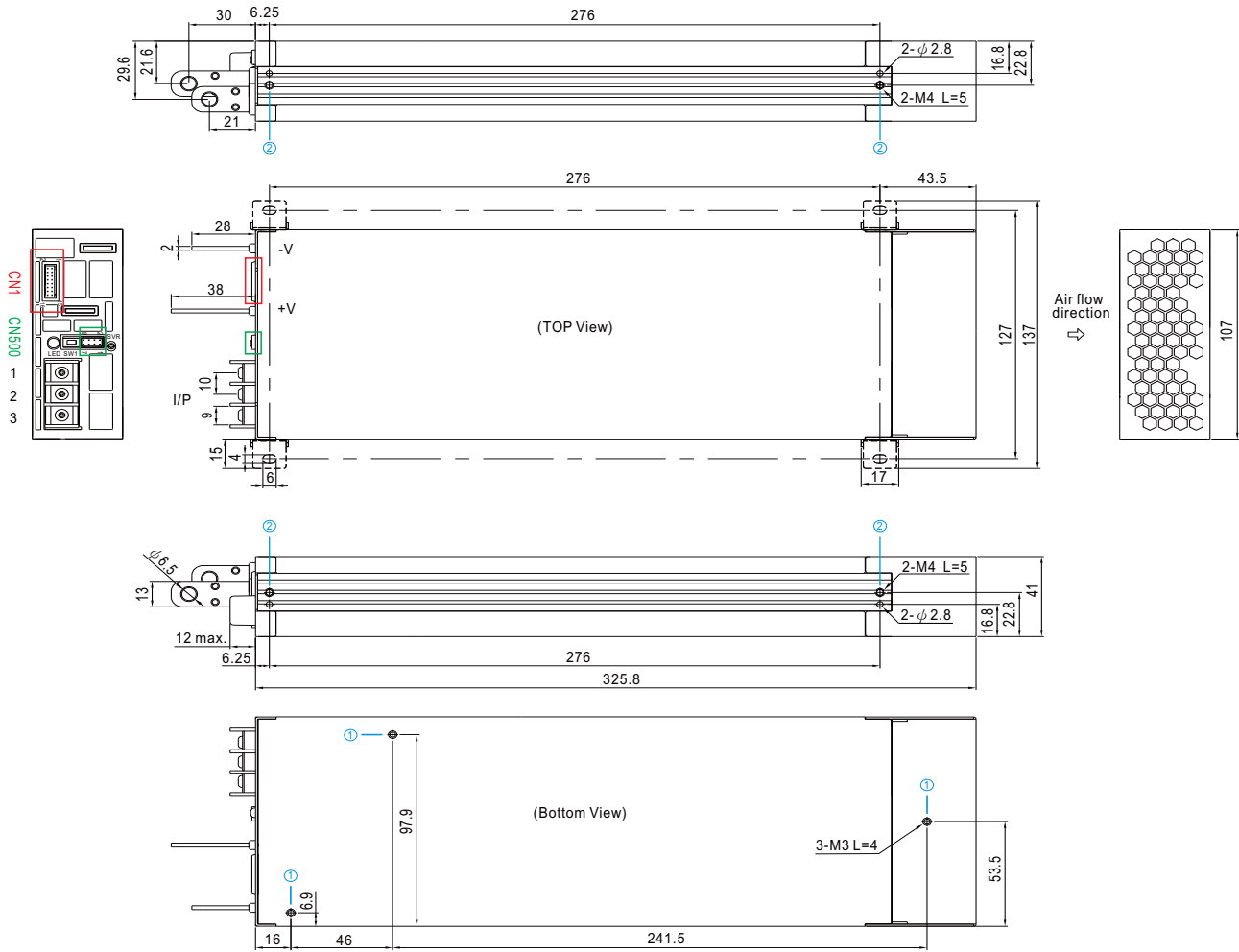
If the lines of CN500 are too long, they should be twisted in pairs to avoid the noise.

◎ DA, DB and -V(signal) are connected mutually in parallel.

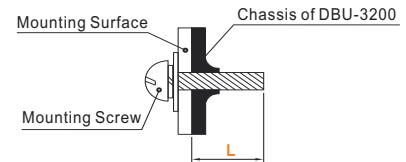
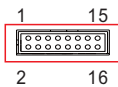
**MECHANICAL SPECIFICATION**

Case No.256

Unit:mm


**※ Mounting Instruction**

| Hole No. | Recommended Screw Size | MAX. Penetration Depth L | Recommended mounting torque |
|----------|------------------------|--------------------------|-----------------------------|
| ①        | M3                     | 4mm                      | 6~8Kgf-cm                   |
| ②        | M4                     | 5mm                      | 7~10Kgf-cm                  |


**※ Control Pin No. Assignment(CN1) : HRS DF11-16DP-2DS or equivalent**


|                |                             |
|----------------|-----------------------------|
| Mating Housing | HRS DF11-16DS or equivalent |
| Terminal       | HRS DF11-16SC or equivalent |

| Pin No. | Function      | Description                                                                                                                                                                                                                                                                   |
|---------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | +12V-AUX      | Auxiliary voltage output, 10.6~13.2V, referenced to GND-AUX (pin2). The maximum load current is 0.8A. This output has the built-in "Oring diodes" and is not controlled by "Remote ON-OFF".                                                                                   |
| 2       | GND-AUX       | Auxiliary voltage output GND. The signal return is isolated from the output terminals (+V & -V).                                                                                                                                                                              |
| 3       | +5V-AUX       | Auxiliary voltage output, 4.5~5.5V, referenced to GND-AUX (pin2). The maximum load current is 0.3A. This output has the built-in "Oring diodes" and is not controlled by "Remote ON-OFF".                                                                                     |
| 4       | Remote ON-OFF | The unit can turn the output ON/OFF by electrical signal or dry contact between Remote ON/OFF and +5V-AUX. (Note.2)<br>Short (4.5 ~ 5.5V) : Power ON ; Open (-0.5 ~ 0.5V) : Power OFF ; The maximum input voltage is 5.5V.                                                    |
| 5       | DC-OK         | High (3.5 ~ 5.5V) : When the Vout ≤ 16V/32V ± 1V.<br>Low (-0.5 ~ 0.5V) : When Vout ≥ 16V/32V ± 1V. The maximum sourcing current is 10mA and only for output. (Note.2)<br>DC OK is associated with battery low protection.                                                     |
| 6       | T-ALARM       | High (3.5 ~ 5.5V) : When the internal temperature exceeds the limit of temperature alarm, or when Fan fails.<br>Low (-0.5 ~ 0.5V) : When the internal temperature is normal, and when Fan works normally.<br>The maximum sourcing current is 10mA and only for output(Note.2) |
| 7,8,9   | A0,A1,A2      | PMBus interface address lines. (Note.1)                                                                                                                                                                                                                                       |
| 10      | D0            | DIP-switch interface lines for charging curve selection. (Note.1)                                                                                                                                                                                                             |
| 11      | PC            | Connection for output current programming. (Note.1)                                                                                                                                                                                                                           |
| 12      | PV            | Connection for output voltage programming. (Note.1)                                                                                                                                                                                                                           |
| 13      | +V (Signal)   | Positive output voltage signal.<br>It cannot be connected directly to the load.                                                                                                                                                                                               |
| 14      | -V (Signal)   | Negative output voltage signal.<br>It is for certain function reference; it cannot be connected directly to the load.                                                                                                                                                         |
| 15      | RTH+          | Temperature sensor(NTC, 5KOhm) comes along with the charger can be connected to the unit to allow temperature compensation of the charging voltage.                                                                                                                           |
| 16      | RTH-          |                                                                                                                                                                                                                                                                               |

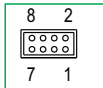
Note1: Non-isolated signal, referenced to the [-V(signal)].

Note2: Isolated signal, referenced to GND-AUX.

## ※AC Input Terminal Pin No. Assignment

| Pin No. | Assignment | Diagram                                                                           | Maximum mounting torque |
|---------|------------|-----------------------------------------------------------------------------------|-------------------------|
| 1       | FG $\perp$ |  | 8Kgf-cm                 |
| 2       | AC/N       |                                                                                   |                         |
| 3       | AC/L       |                                                                                   |                         |

## ※Control Pin No. Assignment(CN500) : HRS DF11-8DP-2DS or equivalent



|                |                            |
|----------------|----------------------------|
| Mating Housing | HRS DF11-8DS or equivalent |
| Terminal       | HRS DF11-8SC or equivalent |

| Pin No. | Function    | Description                                                                                                                            |
|---------|-------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 1, 2    | DA          | Differential digital signal for parallel control.                                                                                      |
| 3, 4    | DB          | Differential digital signal for parallel control.                                                                                      |
| 5, 6    | -V (Signal) | Negative output voltage signal.<br>It is for local sense; and certain function reference; it cannot be connected directly to the load. |
| 7       | NC          | For standard model: None.                                                                                                              |
|         | SDA         | For PMBus model: Serial Data used in the PMBus interface. (Note)                                                                       |
|         | CANH        | For CANBus model: Data line used in CANBus interface. (Note)                                                                           |
| 8       | NC          | For standard model: None.                                                                                                              |
|         | SCL         | For PMBus model: Serial Clock used in the PMBus interface. (Note)                                                                      |
|         | CANL        | For CANBus model: Data line used in CANBus interface. (Note)                                                                           |

Note: Isolated signal, referenced to GND-AUX.

## ※Control Pin No. Assignment.(SW1)

| Pin No. | Function            | Description                                                                                                |
|---------|---------------------|------------------------------------------------------------------------------------------------------------|
| 1, 2    | Terminal resistance | SW1 is the selector of terminal resistor that is designed for DA/DB signals and parallel control function. |

## ■ INSTALLATION MANUAL

Please refer to : <http://www.meanwell.com/manual.html>