



120W DIN Rail Type DC-DC Converter

**DDR-120 series**



## ■ Features

- Compliance to EN50155 and EN45545-2 railway standard
- Width only 32mm
- 2:1 wide input range
- -40~+70°C wide working temperature
- 150% peak load capability
- DC output adjustable
- Cooling by free air convection
- Can be installed on DIN rail TS-35/7.5 or 15
- Protections: Short circuit / Overload / Over voltage /  
Input reverse polarity / Input under voltage protection
- 4KVdc I/O isolation(Reinforced isolation)
- 3 years warranty

## ■ Applications

- Bus, tram, metro or railway system
- Industrial control system
- Semi-conductor fabrication equipment
- Factory automation
- Electro-mechanical
- Wireless network
- Telecom or datacom system

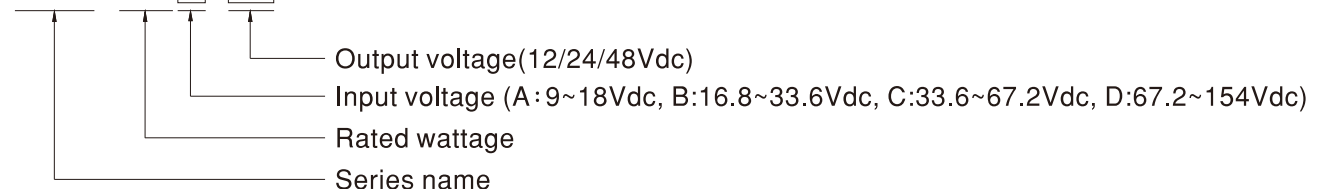
## ■ Description

DDR-120 series is a 120W DIN Rail type DC-DC converter with main features including DIN rail-type easy installation, ultra slim width (32mm), 2:1 wide input voltage, fanless design, -40~+70°C wide operating temperature, 4KVdc I/O isolation, 150% peak load, adjustable output voltage and full protective functions.

This series of models has various input options: 9~18V / 16.8~33.6V / 33.6~67.2V / 67.2~154V and various output options: 12V / 24V / 48V and can be used for industrial & railway control, security control, communication system and other fields. Suitable applications include DC buck/boost regulator, increasing system insulation level and voltage drop compensation along cable...etc.

## ■ Model Encoding

**DDR - 120 A - 24**





## SPECIFICATION

| MODEL                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | DDR-120A-12                                                                                                                                               | DDR-120A-24  | DDR-120A-48                                                        | DDR-120B-12                                  | DDR-120B-24                                                   | DDR-120B-48    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------|----------------|
| OUTPUT                   | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 12V                                                                                                                                                       | 24V          | 48V                                                                | 12V                                          | 24V                                                           | 48V            |
|                          | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.3A                                                                                                                                                      | 4.2A         | 2.1A                                                               | 10A                                          | 5A                                                            | 2.5A           |
|                          | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0 ~ 8.3A                                                                                                                                                  | 0 ~ 4.2A     | 0 ~ 2.1A                                                           | 0 ~ 10A                                      | 0 ~ 5A                                                        | 0 ~ 2.5A       |
|                          | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 99.6W                                                                                                                                                     | 100.8W       | 100.8W                                                             | 120W                                         | 120W                                                          | 120W           |
|                          | PEAK CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 12.45A                                                                                                                                                    | 6.3A         | 3.15A                                                              | 15A                                          | 7.5A                                                          | 3.75A          |
|                          | PEAK POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Note.5 150W (3sec.)                                                                                                                                       |              |                                                                    | 180W (3sec.)                                 |                                                               |                |
|                          | RIPPLE & NOISE (max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Note.2 50mVp-p                                                                                                                                            | 50mVp-p      | 50mVp-p                                                            | 50mVp-p                                      | 50mVp-p                                                       | 50mVp-p        |
|                          | VOLTAGE ADJ. RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 9 ~ 14V                                                                                                                                                   | 24 ~ 28V     | 48 ~ 56V                                                           | 9 ~ 14V                                      | 24 ~ 28V                                                      | 48 ~ 56V       |
|                          | VOLTAGE TOLERANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Note.3 ± 1.0%                                                                                                                                             | ± 1.0%       | ± 1.0%                                                             | ± 1.0%                                       | ± 1.0%                                                        | ± 1.0%         |
|                          | LINE REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ± 0.5%                                                                                                                                                    | ± 0.5%       | ± 0.5%                                                             | ± 0.5%                                       | ± 0.5%                                                        | ± 0.5%         |
| LOAD REGULATION          | ± 1.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ± 1.0%                                                                                                                                                    | ± 1.0%       | ± 1.0%                                                             | ± 1.0%                                       | ± 1.0%                                                        |                |
| SETUP, RISE TIME         | 500ms, 60ms @12Vdc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                           |              | 500ms, 60ms @24Vdc                                                 |                                              |                                                               |                |
| HOLD UP TIME (Typ.)      | comply with 3ms@ full load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                           |              | comply with S1 level (6ms) @ full load, S2 level (10ms) @ 70% load |                                              |                                                               |                |
| INPUT                    | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Note.4 9 ~ 18Vdc                                                                                                                                          | 9 ~ 18Vdc    | 9 ~ 18Vdc                                                          | 16.8 ~ 33.6Vdc                               | 16.8 ~ 33.6Vdc                                                | 16.8 ~ 33.6Vdc |
|                          | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 88.5%                                                                                                                                                     | 88.5%        | 88.5%                                                              | 89%                                          | 89.5%                                                         | 91%            |
|                          | DC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 11.2A @12Vdc                                                                                                                                              |              |                                                                    | 5.6A @24Vdc                                  |                                                               |                |
|                          | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5A @12Vdc                                                                                                                                                 |              |                                                                    | 5A @ 24Vdc                                   |                                                               |                |
| PROTECTION               | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Normally works within 150% rated output power for more than 3 seconds and then constant current protection 105~135% rated output power with auto-recovery |              |                                                                    |                                              |                                                               |                |
|                          | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 14.4 ~ 16.8V                                                                                                                                              | 28.8 ~ 33.6V | 57.6 ~ 67.2V                                                       | 14.4 ~ 16.8V                                 | 28.8 ~ 33.6V                                                  | 57.6 ~ 67.2V   |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Protection type : Shut down o/p voltage, re-power on to recover                                                                                           |              |                                                                    |                                              |                                                               |                |
|                          | REVERSE POLARITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | By internal MOSFET, no damage, recovers automatically after fault condition removed                                                                       |              |                                                                    |                                              |                                                               |                |
|                          | UNDER VOLTAGE LOCKOUT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 12Vin (A - type) :Power ON≥9V , OFF≤8.5V                                                                                                                  |              |                                                                    | 24Vin (B - type) :Power ON≥16.8V , OFF≤16.5V |                                                               |                |
| ENVIRONMENT              | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -40 ~ +70℃ (Refer to "Derating Curve")                                                                                                                    |              |                                                                    |                                              |                                                               |                |
|                          | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5 ~ 95% RH non-condensing                                                                                                                                 |              |                                                                    |                                              |                                                               |                |
|                          | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -40 ~ +85℃ , 5 ~ 95% RH non-condensing                                                                                                                    |              |                                                                    |                                              |                                                               |                |
|                          | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ± 0.03%/℃ (0 ~ 55℃ )                                                                                                                                      |              |                                                                    |                                              |                                                               |                |
|                          | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Component:10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC61373                                                  |              |                                                                    |                                              |                                                               |                |
|                          | OPERATING ALTITUDE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2000 meters                                                                                                                                               |              |                                                                    |                                              |                                                               |                |
| SAFETY & EMC<br>(Note 6) | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | IEC 62368-1 (LVD), EAC TP TC 004, AS/NZS 62368.1 approved; Design refer to UL508                                                                          |              |                                                                    |                                              |                                                               |                |
|                          | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | I/P-O/P:4KVdc I/P-FG:2.5KVdc O/P-FG:2.5KVdc                                                                                                               |              |                                                                    |                                              |                                                               |                |
|                          | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500Vdc / 25℃ / 70% RH                                                                                                |              |                                                                    |                                              |                                                               |                |
|                          | EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Parameter                                                                                                                                                 |              |                                                                    | Standard                                     | Test Level / Note                                             |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Conducted                                                                                                                                                 |              |                                                                    | EN55032                                      | Class B                                                       |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Radiated                                                                                                                                                  |              |                                                                    | EN55032                                      | Class B                                                       |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Voltage Flicker                                                                                                                                           |              |                                                                    | EN61000-3-3                                  | -----                                                         |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Harmonic Current                                                                                                                                          |              |                                                                    | -----                                        | -----                                                         |                |
|                          | EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EN55024 , EN61000-6-2(EN50082-2)                                                                                                                          |              |                                                                    |                                              |                                                               |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Parameter                                                                                                                                                 |              |                                                                    | Standard                                     | Test Level / Note                                             |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ESD                                                                                                                                                       |              |                                                                    | EN61000-4-2                                  | Level 3, 8KV air ; Level 3, 6KV contact; criteria A           |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Radiated                                                                                                                                                  |              |                                                                    | EN61000-4-3                                  | Level 3, 10V/m ; criteria A                                   |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | EFT / Burst                                                                                                                                               |              |                                                                    | EN61000-4-4                                  | Level 3, 2KV ; criteria A                                     |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Surge                                                                                                                                                     |              |                                                                    | EN61000-4-5                                  | Level 3, 1KV/Line-Line ;Level 3, 2KV/Line-Line-FG ;criteria A |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Conducted                                                                                                                                                 |              |                                                                    | EN61000-4-6                                  | Level 3, 10V ; criteria A                                     |                |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Magnetic Field                                                                                                                                            |              |                                                                    | EN61000-4-8                                  | Level 4, 30A/m ; criteria A                                   |                |
| RAILWAY STANDARD         | Compliance to EN45545-2 for fire protection ; Meet EN50155 / IEC60571 including IEC61373 for shock & vibration, EN50121-3-2 for EMC (except for 9~18Vin)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                           |              |                                                                    |                                              |                                                               |                |
| OTHERS                   | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 214.6K hrs min. MIL-HDBK-217F (25℃)                                                                                                                       |              |                                                                    |                                              |                                                               |                |
|                          | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 32*125.2*102mm (W*H*D)                                                                                                                                    |              |                                                                    |                                              |                                                               |                |
|                          | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 510g; 28pcs/15.3Kg/1.22CUFT                                                                                                                               |              |                                                                    |                                              |                                                               |                |
| NOTE                     | 1. All parameters NOT specially mentioned are measured at normal input (A:12Vdc , B:24Vdc) , rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ f & 47 μ f parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. Derating may be needed under low input voltage. Please check the derating curve for more details.<br>5. 3 seconds max., please refer to peak loading curves.<br>6. The power supply is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the 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="http://www.meanwell.com">http://www.meanwell.com</a> )<br>7. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft). |                                                                                                                                                           |              |                                                                    |                                              |                                                               |                |