



## ■ Features

- Support 1+1 and N+1 redundancy system
- 2 channels input and 1 output
- Suitable for redundancy operation of 12V/24V/48V system
- Output current up to 40A
- Cooling by free air convection
- -40~+80°C ultra-wide operating temperature (>+60°C derating)
- Built-in 2 channels DC OK signal and alarm relay contact
- 3 years warranty

## ■ Applications

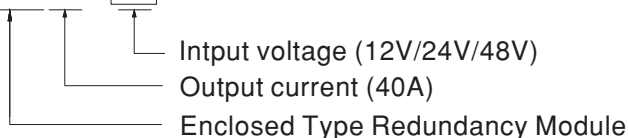
- Industrial control system
- Semiconductor fabrication equipment
- Factory automation
- Electro-mechanical apparatus

## ■ Description

The ERDN40 series is a 40A redundancy module that can be used with a power supply to improve overall system operation reliability. Product key features include: 12V/24V/48V input voltage for selection, support N+1 and 1+1 redundancy systems, built-in two rails DC input contacts and single output. The MOSFET technology implemented can reduce heat loss and reduce the voltage difference between the input and output voltages, built-in 2 channels DC OK relay contacts for monitoring output status, ultra-wide operating temperature of -40 to +80°C.

## ■ Model Encoding

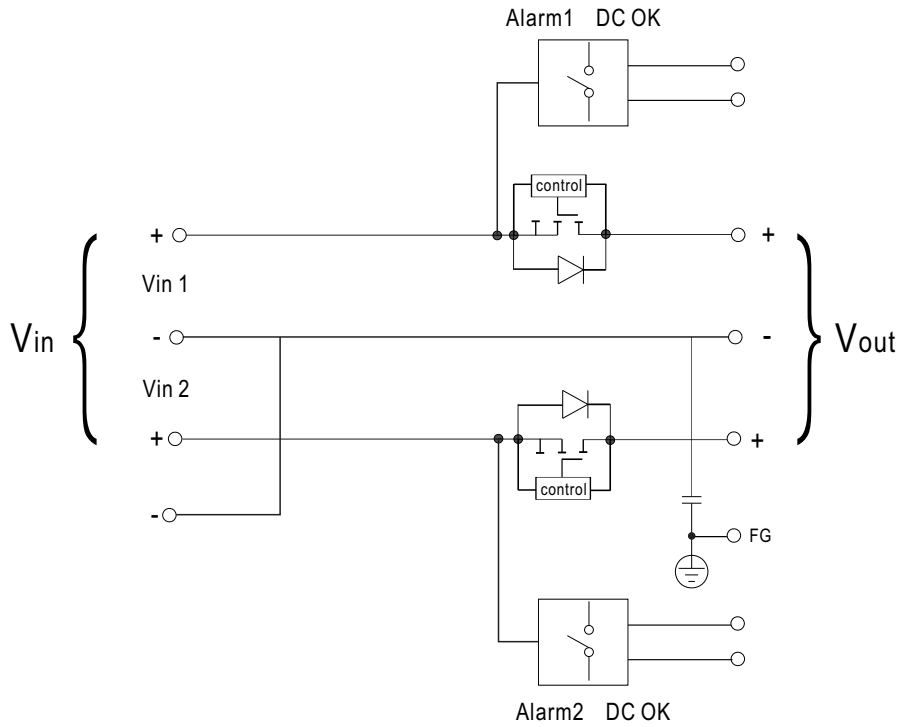
ERDN40 - 24



## SPECIFICATION

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                          |                           |                                                                    |  |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------|--|
| <b>MODEL</b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ERDN40-□                                                                                                 |                           |                                                                    |  |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | □ =12V, 24V, 48V                                                                                         |                           |                                                                    |  |
| <b>INPUT</b>                     | NUMBER OF INPUT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2 Channels                                                                                               |                           |                                                                    |  |
|                                  | DC NORMAL VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 12Vdc                                                                                                    | 24Vdc                     | 48Vdc                                                              |  |
|                                  | DC VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9~14Vdc                                                                                                  | 19~29Vdc                  | 36~60Vdc                                                           |  |
|                                  | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0~20A x2 input , 0~40A x1 input Continuous                                                               |                           |                                                                    |  |
|                                  | VOLTAGE DROP (Vin-Vout) (max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.2V                                                                                                     |                           |                                                                    |  |
|                                  | PEAK CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0~30A x2 input , 0~60A x1 input 5Sec.                                                                    |                           |                                                                    |  |
|                                  | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 98%                                                                                                      |                           |                                                                    |  |
|                                  | INPUT REVERSE CURRENT (max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1mA                                                                                                      |                           |                                                                    |  |
|                                  | INPUT REVERSE VOLTAGE (max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 40Vdc                                                                                                    | 40Vdc                     | 65Vdc                                                              |  |
| <b>OUTPUT</b>                    | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0~40A, Continuous                                                                                        |                           |                                                                    |  |
|                                  | PEAK CURRENT (max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 60A, 5Sec.                                                                                               |                           |                                                                    |  |
|                                  | CAPACITANCE(Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 320uF                                                                                                    |                           |                                                                    |  |
|                                  | STANDBY POWER LOSSES(Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.5W                                                                                                     |                           |                                                                    |  |
| <b>PROTECTION</b>                | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <60A, 5Sec. No damage                                                                                    |                           |                                                                    |  |
|                                  | SHORT CIRCUIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <60A, 5Sec. No damage                                                                                    |                           |                                                                    |  |
| <b>FUNCTION</b>                  | REDUNDANCY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | For 1+1 redundancy ,and support N+1 redundancy                                                           |                           |                                                                    |  |
|                                  | BOTH INPUTS VOLTAGE ALARM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <8.5V or >14.7V (±5%)                                                                                    | <18V or >31V (±5%)        | <34.2V or >63V (±5%)                                               |  |
|                                  | RELAY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 30Vdc/1A resistive load                                                                                  |                           |                                                                    |  |
|                                  | LED STATUS DISPLAY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Green LED OK                                                                                             |                           |                                                                    |  |
| <b>ENVIRONMENT</b>               | COOLING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Free air convection                                                                                      |                           |                                                                    |  |
|                                  | WORKING TEMP. <small>Note.2</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -40 ~ +80°C (Refer to "Derating Curve")                                                                  |                           |                                                                    |  |
|                                  | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5 ~ 95% RH non-condensing                                                                                |                           |                                                                    |  |
|                                  | STORAGE TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -40 ~ +85°C                                                                                              |                           |                                                                    |  |
|                                  | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ±0.03%/°C (0 ~ 60°C)                                                                                     |                           |                                                                    |  |
|                                  | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Component:10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC61373 |                           |                                                                    |  |
|                                  | OPERATING ALTITUDE <small>Note.3</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5000 meters/OVC II                                                                                       |                           |                                                                    |  |
| <b>SAFETY &amp; EMC (Note.4)</b> | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IEC62368-1, UL62368-1, EAC TP TC 004 approved                                                            |                           |                                                                    |  |
|                                  | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | IP/OP - Chassis : 0.5KVac ; IP/OP- Relay : 0.5KVac ; Relay - Chassis : 0.5KVac                           |                           |                                                                    |  |
|                                  | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | IP/OP - Chassis, IP/OP- Relay, Relay - Chassis:>100M Ohms / 500Vdc / 25°C / 70% RH                       |                           |                                                                    |  |
|                                  | <b>EMC EMISSION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Parameter</b>                                                                                         | <b>Standard</b>           | <b>Test Level / Note</b>                                           |  |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Conducted                                                                                                | EN55032(CISPR32)          | Class B                                                            |  |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Radiated                                                                                                 | EN55032(CISPR32)          | Class B                                                            |  |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Voltage Flicker                                                                                          | ----                      | ----                                                               |  |
|                                  | <b>EMC IMMUNITY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Harmonic Current                                                                                         | ----                      | ----                                                               |  |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | EN55035, EN61000-6-2(EN50082-2), EN55024                                                                 |                           |                                                                    |  |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Parameter</b>                                                                                         | <b>Standard</b>           | <b>Test Level / Note</b>                                           |  |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ESD                                                                                                      | EN61000-4-2               | Level 4, 15KV air ; Level 3, 8KV 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-Chassis ;criteria A |  |
| Conducted                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | EN61000-4-6                                                                                              | Level 3, 10V ; criteria A |                                                                    |  |
| Magnetic Field                   | EN61000-4-8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Level 4, 30A/m ; criteria A                                                                              |                           |                                                                    |  |
| <b>OTHERS</b>                    | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 570.61K hrs min. Telcordia SR-332 (Bellcore) ; 294.12K hrs min. MIL-HDBK-217F (25°C)                     |                           |                                                                    |  |
|                                  | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 97*99*36mm (W*D*H)                                                                                       |                           |                                                                    |  |
|                                  | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.276Kg;45psc/14Kg/0.98CUFT                                                                              |                           |                                                                    |  |
| <b>NOTE</b>                      | <p>1. All parameters NOT specially mentioned are measured at normal input , rated load and 25°C of ambient temperature.</p> <p>2. Derating may be needed over high ambient temperature. Please check the derating curve for more details.</p> <p>3. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>4. 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." (as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a>)</p> |                                                                                                          |                           |                                                                    |  |

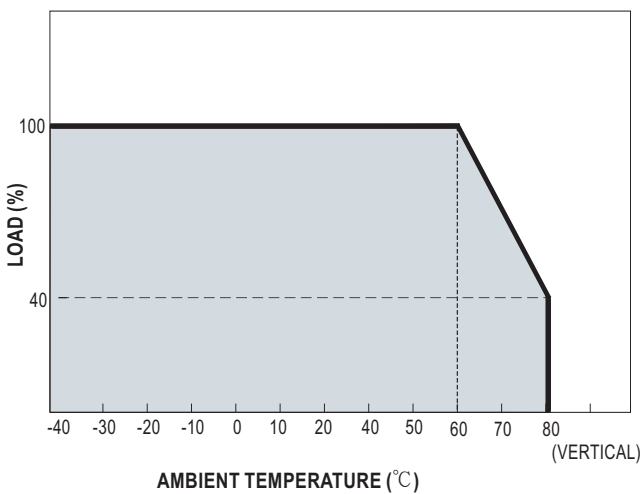
### ■ Block Diagram



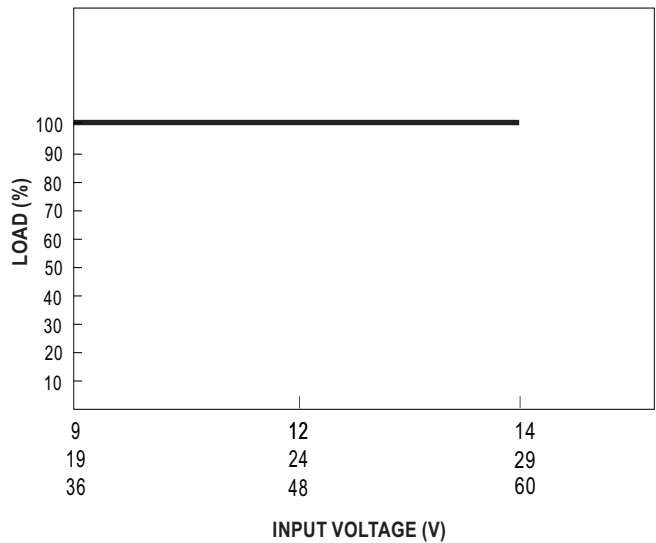
### ■ DC OK Relay Contact

|                        |                                             |
|------------------------|---------------------------------------------|
| Contact Ratings (max.) | 30V/1A resistive load                       |
| Contact Close(DC OK)   | PSU turns on                                |
| Contact Open(DC Fail)  | PSU turns off / over or under input voltage |

### ■ Derating Curve



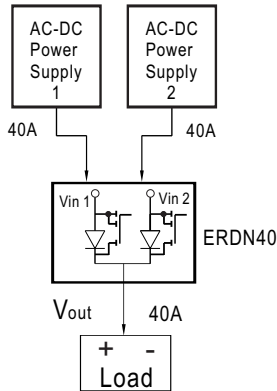
### ■ Output Derating VS Input Voltage



## Typical Application Notes

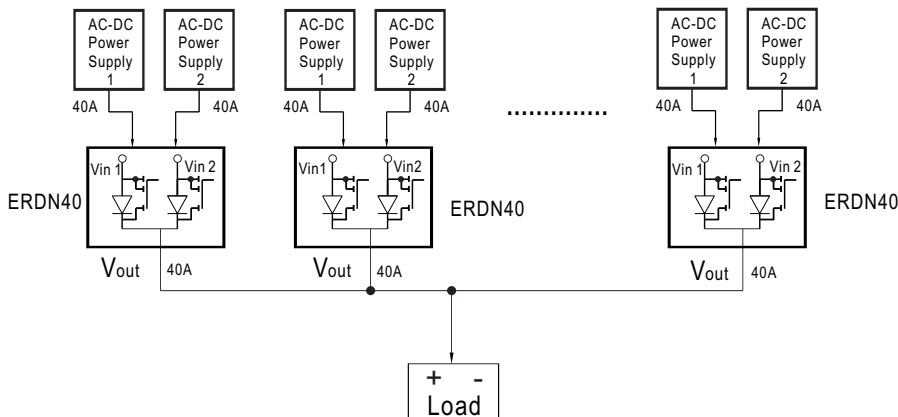
### 1. 1+1 Redundancy:

Using 1 more PSU as the redundant unit



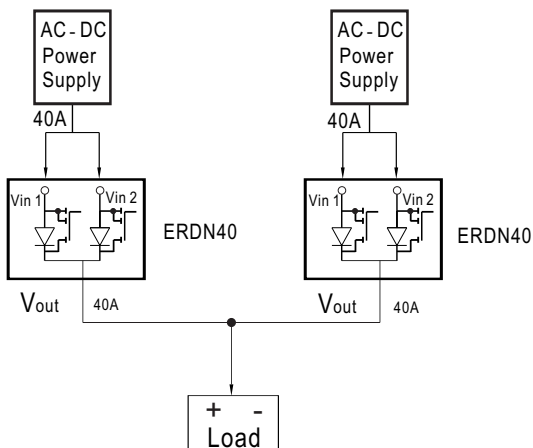
### 2. 1+N Redundancy:

Using more PSUs as the redundant units to increase the reliability



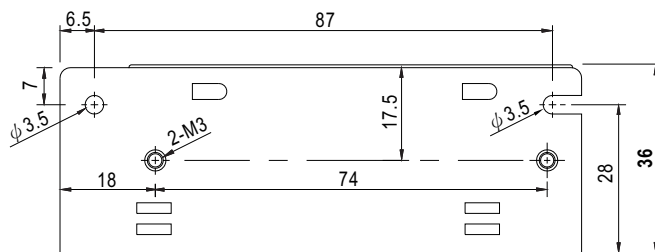
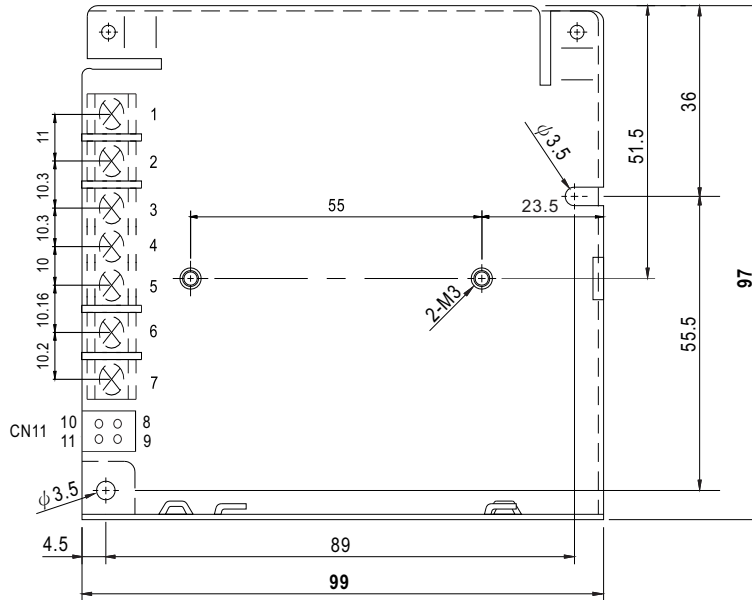
### 3. Single Use:

Connecting only one PSU to one ERDN40 to reduce the stress of the MOSFET and hence increase the reliability



## Mechanical Specification

Case No.905B Unit:mm



### Terminal Pin No. Assignment

| Pin No. | Assignment     |
|---------|----------------|
| 1       | FG             |
| 2       | output+        |
| 3       | output-        |
| 4,5     | DC input -Vin  |
| 6       | DC input +Vin1 |
| 7       | DC input +Vin2 |

### Function Connector(CN11): TKP DH2I-2X2 or equivalent

| Pin No. | Assignment   | Mating Housing           | Terminal             |
|---------|--------------|--------------------------|----------------------|
| 8,9     | Alarm1 DC OK | TKP DH2<br>or equivalent | TKP<br>or equivalent |
| 10,11   | Alarm2 DC OK |                          |                      |

## Installation Manual

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