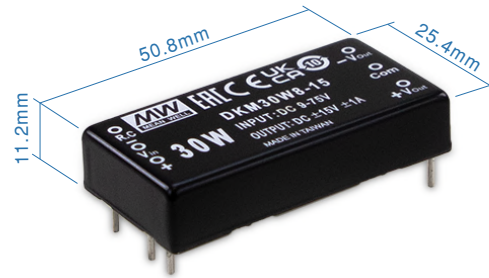




30W 2"x1" Package 8:1 Ultra-Wide Input DC-DC Regulated Converter

**SKM30W8 & DKM30W8** series



## ■ Features

- DIP 2"x1" package with industry standard pinout
- 8:1(9~75Vdc) ultra-wide input range
- Operating temperature range -40 ~ +90°C
- No minimum load required
- Comply to BS EN/EN55032 **radiated Class A without additional components**
- High efficiency up to 90%
- Protections: Short circuit (Continuous) / Overload / Over voltage / UVLO
- 3KVdc I/O isolation
- Remote ON/OFF control
- Trimming output (±10%)
- 3 years warranty

## ■ Applications

- Telecom/dacom system
- Wireless network
- Industrial control facility
- Instrument
- Analyzer
- Detector
- Data switch

## ■ GTIN CODE

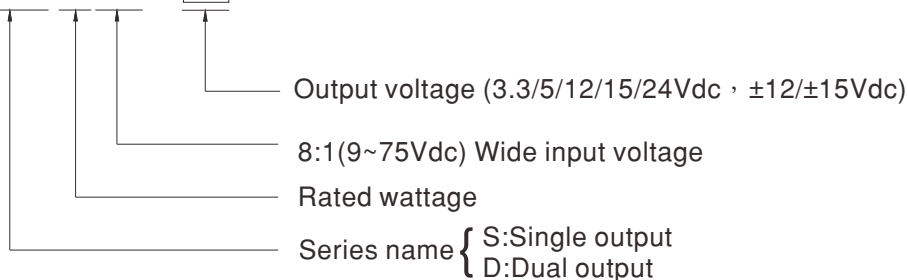
MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

## ■ Description

SKM30W8 and DKM30W8 series are 30W isolated and regulated module type DC-DC converter with DIP 2"x1" package. It features international standard pins, a high efficiency up to 90%, wide working temperature range -40~+90°C, 3KVdc I/P-O/P isolation voltage, compliance to BS EN/EN55032 radiated Class A without additional components, continuous-mode short circuit, overload, over voltage, input under voltage protection, remote ON/OFF and trimmable output voltage etc. The models account for 9~75Vdc 8:1 ultra-wide input range, and various output voltage, 3.3V/5V/12V/15V/24V for single output and ±12V/±15V for dual outputs, which are suitable for all kinds of systems, such as industrial control, telecommunication field, distributed power architecture, and so on.

## ■ Model Encoding

**S** **KM** **30W8** - **12**





30W 2"x1" Package 8:1 Ultra-Wide Input DC-DC Regulated Converter

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| MODEL SELECTION TABLE |                                              |               |           |                   |                   |                      |                          |
|-----------------------|----------------------------------------------|---------------|-----------|-------------------|-------------------|----------------------|--------------------------|
| ORDER NO.             | INPUT                                        |               |           | OUTPUT            |                   | EFFICIENCY<br>(TYP.) | CAPACITOR LOAD<br>(MAX.) |
|                       | INPUT VOLTAGE<br>(RANGE)                     | INPUT CURRENT |           | OUTPUT<br>VOLTAGE | OUTPUT<br>CURRENT |                      |                          |
|                       |                                              | NO LOAD       | FULL LOAD |                   |                   |                      |                          |
| SKM30W8-03            | Nominal<br>12V, 24V,36V,48V,72V<br>(9 ~ 75V) | 15mA          | 1119mA    | 3.3V              | 0~7000mA          | 87%                  | 680μF                    |
| SKM30W8-05            |                                              | 15mA          | 1437mA    | 5V                | 0~6000mA          | 87%                  | 680μF                    |
| SKM30W8-12            |                                              | 15mA          | 1420mA    | 12V               | 0~2500mA          | 89%                  | 330μF                    |
| SKM30W8-15            |                                              | 15mA          | 1420mA    | 15V               | 0~2000mA          | 90%                  | 220μF                    |
| SKM30W8-24            |                                              | 15mA          | 1420mA    | 24V               | 0~1250mA          | 89%                  | 100μF                    |
| DKM30W8-12            |                                              | 15mA          | 1420mA    | ±12V              | ±0~1250mA         | 89%                  | *150μF                   |
| DKM30W8-15            |                                              | 15mA          | 1420mA    | ±15V              | ±0~1000mA         | 90%                  | *100μF                   |

\* For each output

## SPECIFICATION

### INPUT

|                            |                               |
|----------------------------|-------------------------------|
| VOLTAGE RANGE              | 9~75Vdc                       |
| SURGE VOLTAGE (100ms max.) | 100Vdc                        |
| FILTER                     | Pi type                       |
| PROTECTION                 | Fuse recommended 8A Slow-Blow |

### OUTPUT

|                                 |                                                    |
|---------------------------------|----------------------------------------------------|
| VOLTAGE ACCURACY                | ±2% max.                                           |
| RATED POWER                     | 30W                                                |
| RIPPLE & NOISE                  | Note.2 3.3 ~ 15Vo: 150mVp-p, 24Vo: 240mVp-p        |
| LINE REGULATION                 | Note.3 ±0.2%                                       |
| LOAD REGULATION                 | Note.4 ±1% for 3.3Vo model, ±0.5% for other models |
| CROSS REGULATION                | ±5% @ 25% ~ 100% load only dual output             |
| SWITCHING FREQUENCY (Typ.)      | 200KHz                                             |
| EXTERNAL TRIM ADJ. RANGE (Typ.) | ±10% (Single output model only)                    |

### PROTECTION

|                              |                                                                           |        |
|------------------------------|---------------------------------------------------------------------------|--------|
| SHORT CIRCUIT                | Continuous, automatic recovery                                            |        |
| OVERLOAD                     | 110 ~ 190%                                                                |        |
|                              | Protection type : Recovers automatically after fault condition is removed |        |
| OVER VOLTAGE                 | Clamp by TVS diodes                                                       |        |
| UNDER VOLTAGE LOCKOUT (Typ.) | Start-up voltage                                                          | 8.8Vdc |
|                              | Shutdown voltage                                                          | 7.5Vdc |

### FUNCTION

|                |                                                                                          |
|----------------|------------------------------------------------------------------------------------------|
| REMOTE CONTROL | Power ON: R.C. ~ -Vin >2.5~75Vdc or open circuit ; Power OFF: R.C. ~ -Vin <1Vdc or short |
|----------------|------------------------------------------------------------------------------------------|

### ENVIRONMENT

|                         |                                                                         |
|-------------------------|-------------------------------------------------------------------------|
| COOLING                 | Free-air convection                                                     |
| WORKING TEMP.           | -40 ~ +90°C (Refer to "Derating Curve")                                 |
| CASE TEMPERATURE        | +110°C max.                                                             |
| WORKING HUMIDITY        | 5% ~ 95% RH non-condensing                                              |
| STORAGE TEMP., HUMIDITY | -55 ~ +125°C, 10 ~ 95% RH non-condensing                                |
| TEMP. COEFFICIENT       | ±0.03% / °C (0 ~ 60°C)                                                  |
| SOLDERING TEMPERATURE   | 1.5mm from case of 3 ~ 5sec./265°C max.                                 |
| VIBRATION               | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes |

### SAFETY & EMC (Note.5)

|                              |                                            |
|------------------------------|--------------------------------------------|
| SAFETY STANDARDS             | EAC TP TC 020/2011 approved                |
| WITHSTAND VOLTAGE            | I/P-O/P:3KVdc                              |
| ISOLATION RESISTANCE         | I/P-O/P:100M Ohms / 500Vdc / 25°C / 70% RH |
| ISOLATION CAPACITANCE (Typ.) | 1000pF                                     |

| EMC EMISSION | Parameter               | Standard               | Test Level / Note                                                           |
|--------------|-------------------------|------------------------|-----------------------------------------------------------------------------|
|              | Conducted               | BS EN/EN55032(CISPR32) | N/A                                                                         |
|              | Radiated                | BS EN/EN55032(CISPR32) | Class A without additional components<br>Class B with additional components |
| EMC IMMUNITY | Parameter               | Standard               | Test Level / Note                                                           |
|              | ESD                     | BS EN/EN61000-4-2      | Level 2, ±4KV contact                                                       |
|              | Radiated Susceptibility | BS EN/EN61000-4-3      | Level 2, 3V/m                                                               |
|              | EFT/Bursts              | BS EN/EN61000-4-4      | Level 1, 0.5KV                                                              |
|              | Surge                   | BS EN/EN61000-4-5      | Level 2, ±0.5KV Line-Line                                                   |
|              | Conducted               | BS EN/EN61000-4-6      | Level 2, 3V(e.m.f.)                                                         |
|              | Magnetic Field Immunity | BS EN/EN61000-4-8      | Level 1, 1A/m                                                               |

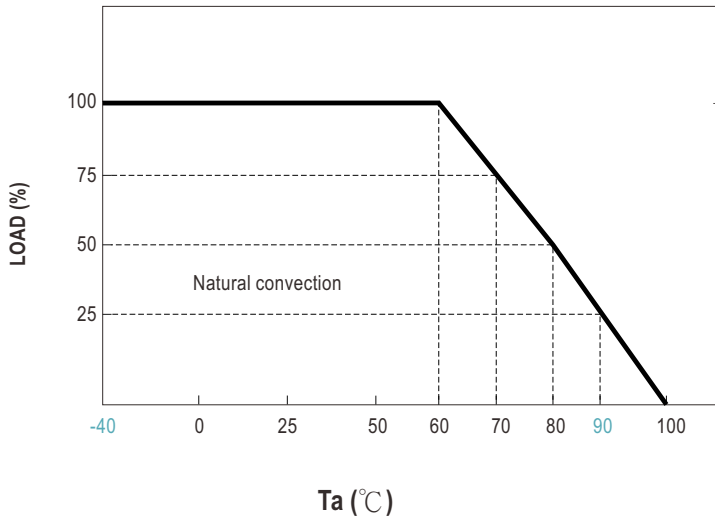
### OTHERS

|                   |                                                 |
|-------------------|-------------------------------------------------|
| MTBF              | >500Khrs MIL-HDBK-217F(25°C)                    |
| DIMENSION (L*W*H) | 50.8*25.4*11.2mm (2*1*0.44 inch)                |
| CASE MATERIAL     | Six-side shielded case                          |
| PACKING           | 33g ; 10pcs/per tube, 400pcs/40 tube/per carton |

### NOTE

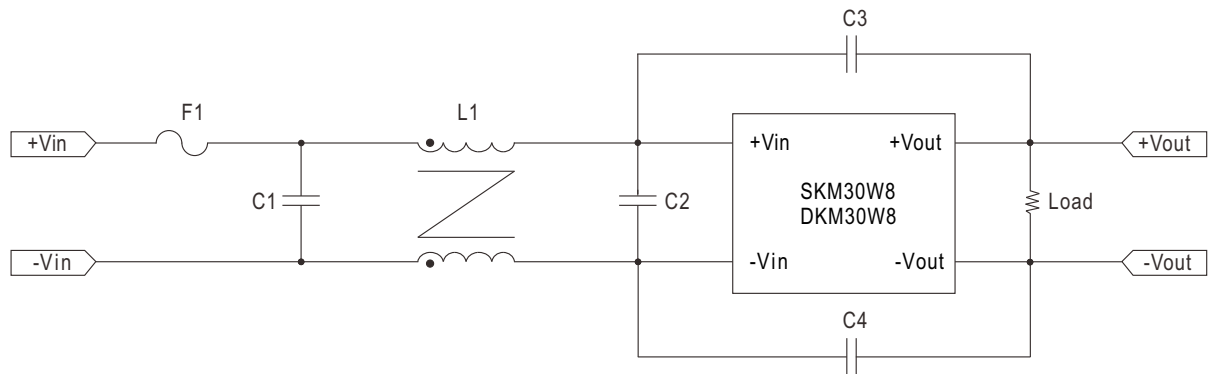
- 1.All parameters are specified at normal input (24Vdc), rated load, 25°C 70% RH ambient.
  - 2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1μf & 47μf capacitor.
  - 3.Line regulation is measured from low line to high line at rated load.
  - 4.Load regulation is measured from 0% to 100% rated load.
  - 5.The final equipment must be re-confirm that it still meet EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies."(as available on <http://www.meanwell.com>)
- ※ Product Liability Disclaimer : For detailed information, please refer to <https://www.meanwell.com/serviceDisclaimer.aspx>

### Derating Curve



### EMC Suggestion Circuit

※ Required external componets to meet BS EN/EN55032 radiated Class B emission are as below:



| Model No.          | BS EN/EN55032 radiated Class B |           |                        |                    |                    |                       |
|--------------------|--------------------------------|-----------|------------------------|--------------------|--------------------|-----------------------|
|                    | F1                             | C1        | C2                     | C3                 | C4                 | L1                    |
| SKM30W8<br>DKM30W8 | Suggest 8A<br>Slow-Blow Type   | 47μF/100V | 2.2μF/50V<br>1210 MLCC | 1000pF/5KV<br>MLCC | 1000pF/5KV<br>MLCC | 325μH<br>Common Choke |

Note : Choose according to actual input current for F1

### External Output Trimming

In order to trim the voltage up or down one needs to connect the trim resistor either between the trim pin and -Vo for trim-up and between trim pin and +Vo for trim-down. This is shown in Figures 1 and 2:

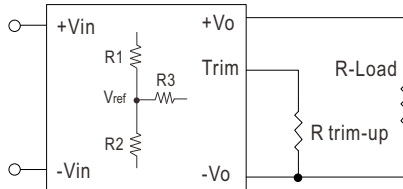


Figure 1. Trim-up Voltage Setup

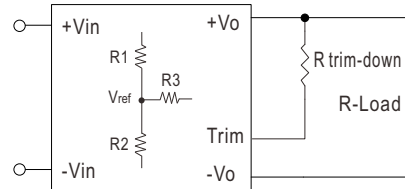


Figure 2. Trim-down Voltage Setup

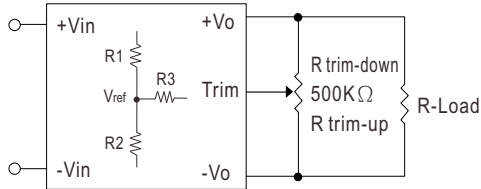


Figure 3. Trim-Connections

Table 1 – Trim up and Trim down Resistor Values

| Model Number | Output Voltage(V) | R1 (KΩ) | R2 (KΩ) | R3 (KΩ) | Vref |
|--------------|-------------------|---------|---------|---------|------|
| SKM30W8-03   | 3.3               | 2.43    | 1.47    | 7.5     | 1.24 |
| SKM30W8-05   | 5                 | 1       | 1       | 3.9     | 2.5  |
| SKM30W8-12   | 12                | 3.83    | 1       | 7.5     | 2.5  |
| SKM30W8-15   | 15                | 7.5     | 1.5     | 11      | 2.5  |
| SKM30W8-24   | 24                | 8.66    | 1       | 8.2     | 2.5  |

1. The value of **R<sub>trim-up</sub>** defined as:

$$A = \left( \frac{V_{ref}}{V_o' - V_{ref}} \right) \times R1$$

$$R_{trim-up} = \left( \frac{A \times R2}{R2 - A} \right) - R3$$

Where

**R<sub>trim-up</sub>** is the external resistor in Kohm.

**V<sub>o, nom</sub>** is the nominal output voltage.

**V<sub>o'</sub>** is the desired output voltage.

**R1, R2, R3** and **V<sub>ref</sub>** are internal to the unit and defined in Table 1.

For example, to trim-up the output voltage of 12V model (SKM30W8-12) by 10% to 13.2V, **R<sub>trim-up</sub>** is calculated as follows:

$$V_{o, nom} = 12V$$

$$V_o' = 13.2V$$

$$R1 = 3.83 K\Omega$$

$$R2 = 1 K\Omega$$

$$R3 = 7.5 K\Omega$$

$$V_{ref} = 2.5V$$

$$A = \left( \frac{2.5}{13.2 - 2.5} \right) \times 3.83 = 0.894$$

$$R_{trim-up} = \left( \frac{0.894 \times 1}{1 - 0.894} \right) - 7.5$$

$$= \left( \frac{0.894}{0.106} \right) - 7.5$$

$$= 0.933K\Omega$$

2. The value of **R<sub>trim-down</sub>** defined as:

$$A = \left( \frac{V_o' - V_{ref}}{V_{ref}} \right) \times R2$$

$$R_{trim-down} = \left( \frac{A \times R1}{R1 - A} \right) - R3$$

Where

**R<sub>trim-down</sub>** is the external resistor in Kohm.

**V<sub>o,nom</sub>** is the nominal output voltage.

**V<sub>o'</sub>** is the desired output voltage.

R1, R2, R3 and Vref are internal to the unit and defined in Table 1.

For example, to trim-down the output voltage of 12V model (SKM30W8-12) by 10% to 10.8V, **R<sub>trim-down</sub>** is calculated as follows:

$$V_{o,nom} = 12V$$

$$V_o' = 10.8V$$

$$R1 = 3.83 K\Omega$$

$$R2 = 1 K\Omega$$

$$R3 = 7.5 K\Omega$$

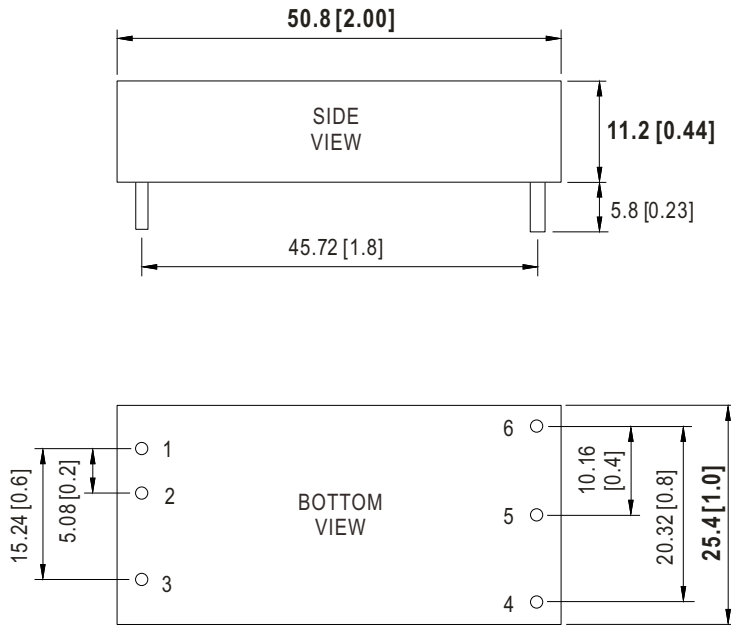
$$V_{ref} = 2.5V$$

$$A = \left( \frac{10.8 - 2.5}{2.5} \right) \times 1 = 3.32$$

$$\begin{aligned} R_{trim-down} &= \left( \frac{3.32 \times 3.83}{3.83 - 3.32} \right) - 7.5 \\ &= \left( \frac{12.715}{0.15} \right) - 7.5 \\ &= 17.431K\Omega \end{aligned}$$

### Mechanical Specification

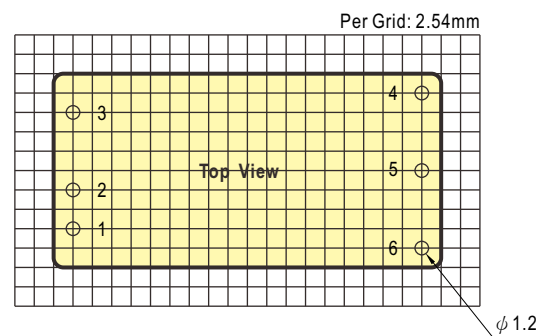
- All dimensions in mm(inch)
- Tolerance: x.x, x.xx $\pm$ 0.5mm(x.x, x.xx $\pm$ 0.02")



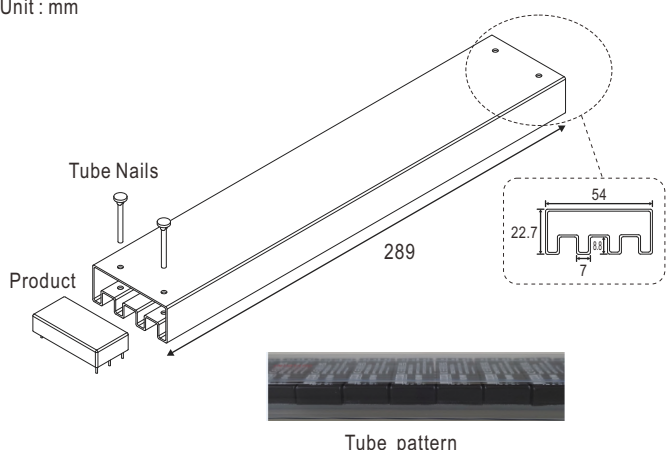
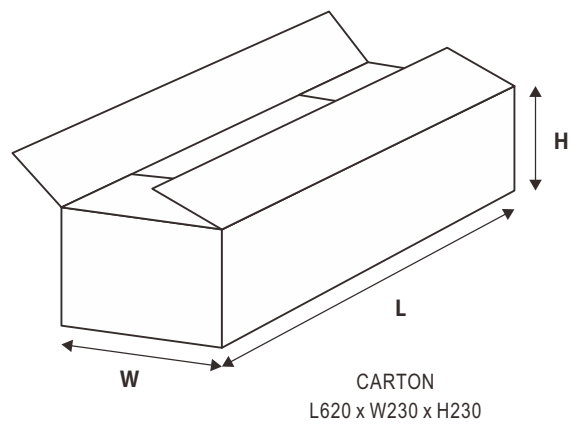
Note : Pin size tolerance  $\phi$  1 $\pm$ 0.1mm

### Pin Assignment

| Pin-Out |                            |                          |
|---------|----------------------------|--------------------------|
| Pin No. | SKM30W8<br>(Single output) | DKM30W8<br>(Dual output) |
| 1       | +Vin                       | +Vin                     |
| 2       | -Vin                       | -Vin                     |
| 3       | R.C.                       | R.C.                     |
| 4       | Trim                       | -Vout                    |
| 5       | -Vout                      | Common                   |
| 6       | +Vout                      | +Vout                    |



### ■ Packing

| Standard Tube Packing                                                                                                                                                                                                                           | MPQ<br>Per Tube<br>(PCS) | One Tube<br>G.W. | Max. Q'TY/<br>Carton(PCS) | One Carton<br>G.W. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------|---------------------------|--------------------|
| <p>Unit : mm</p>  <p>Tube pattern</p>  <p>CARTON<br/>L620 x W230 x H230</p> | 10                       | 418g             | 400                       | 17.52Kg            |

### ■ Installation Manual

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