


**EAC** **CE** **UK** **CA**

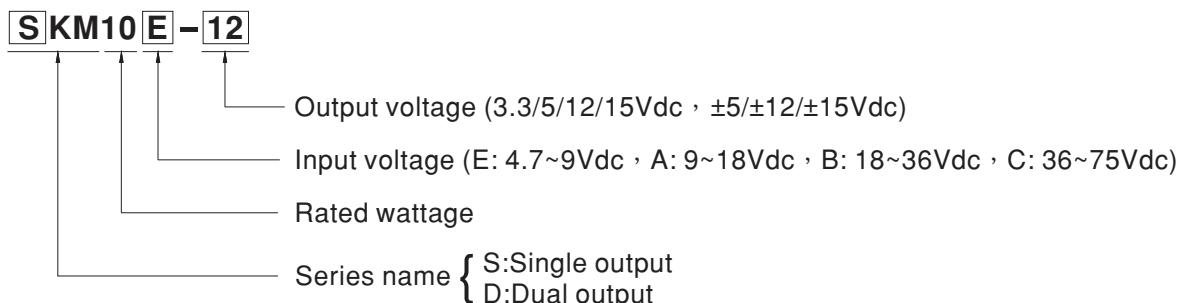

## ■ Features

- DIP 1"x1" package with industry standard pinout
- 2:1 wide input range
- Operating temperature range -40 ~ +85°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 / Input under voltage
- 1.5KVDC I/O isolation
- Remote ON/OFF control and Trimming output ( $\pm 10\%$ )
- 3 years warranty

## ■ Description

SKM10 and DKM10 series are 10W isolated and regulated module type DC-DC converter with DIP 1"x1" package. It features international standard pins, a high efficiency up to 90%, wide working temperature range -40~+85°C, 1.5KVDC I/P-O/P isolation voltage, Compliance to BS EN/EN55032 radiated Class A without additional components, continuous-mode short circuit protection, etc. The models account for different input voltage 4.7~9V, 9~18V, 18~36V and 36~75V 2:1 wide input range, and various output voltage, 3.3V/5V/12V/15V for single output and  $\pm 5V/\pm 12V/\pm 15V$  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



## ■ Applications

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

## ■ GTIN CODE

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



10W 1"x1" Package DC-DC Regulated Converter

**SKM10 & DKM10 series**

MODEL SELECTION TABLE										
ORDER NO.	INPUT				OUTPUT		EFFICIENCY (Typ.)	CAPACITOR LOAD (MAX.)		
	INPUT VOLTAGE (RANGE)	INPUT CURRENT		OUTPUT VOLTAGE	OUTPUT CURRENT					
		NO LOAD	FULL LOAD							
SKM10E-03	5V (4.7 ~ 9V)	85mA	1897mA	3.3V	2500mA	87%	2470µF			
SKM10E-05		85mA	2299mA	5V	2000mA	87%	2000µF			
SKM10E-12		30mA	2298mA	12V	833mA	87%	940µF			
SKM10E-15		30mA	2297mA	15V	666mA	87%	690µF			
DKM10E-05		40mA	2353mA	±5V	±0 ~ 1000mA	85%	*1000µF			
DKM10E-12		40mA	2295mA	±12V	±0 ~ 416mA	87%	*440µF			
DKM10E-15		40mA	2297mA	±15V	±0 ~ 333mA	87%	*330µF			
SKM10A-03	12V (9 ~ 18V)	30mA	855mA	3.3V	2500mA	81%	2470µF			
SKM10A-05		30mA	980mA	5V	2000mA	85%	2000µF			
SKM10A-12		35mA	957mA	12V	833mA	89%	940µF			
SKM10A-15		35mA	956mA	15V	666mA	87%	690µF			
DKM10A-05		40mA	985mA	±5V	±0 ~ 1000mA	85%	*1000µF			
DKM10A-12		40mA	957mA	±12V	±0 ~ 416mA	87%	*440µF			
DKM10A-15		40mA	957mA	±15V	±0 ~ 333mA	89%	*330µF			
SKM10B-03	24V (18 ~ 36V)	25mA	421mA	3.3V	2500mA	82%	2470µF			
SKM10B-05		25mA	490mA	5V	2000mA	85%	2000µF			
SKM10B-12		25mA	478mA	12V	833mA	88%	940µF			
SKM10B-15		25mA	478mA	15V	666mA	88%	690µF			
DKM10B-05		25mA	490mA	±5V	±0 ~ 1000mA	85%	*1000µF			
DKM10B-12		25mA	478mA	±12V	±0 ~ 416mA	88%	*440µF			
DKM10B-15		25mA	478mA	±15V	±0 ~ 333mA	90%	*330µF			
SKM10C-03	48V (36 ~ 75V)	15mA	213mA	3.3V	2500mA	81%	2470µF			
SKM10C-05		15mA	245mA	5V	2000mA	85%	2000µF			
SKM10C-12		15mA	239mA	12V	833mA	89%	940µF			
SKM10C-15		15mA	239mA	15V	666mA	88%	690µF			
DKM10C-05		15mA	246mA	±5V	±0 ~ 1000mA	85%	*1000µF			
DKM10C-12		15mA	239mA	±12V	±0 ~ 416mA	86%	*440µF			
DKM10C-15		15mA	239mA	±15V	±0 ~ 333mA	89%	*330µF			

\* For each output

SPECIFICATION			
INPUT	VOLTAGE RANGE	E: 4.7~9Vdc , A: 9~18Vdc , B: 18~36Vdc , C: 36~75Vdc	
	SURGE VOLTAGE (100ms max.)	5Vin models : 12Vdc, 12Vin models : 25Vdc, 24Vin models : 50Vdc, 48Vin models : 100Vdc	
	FILTER	Pi type	
	PROTECTION	Fuse recommended. 5Vin models: 5A delay time Type, 12Vin models: 4A delay time Type, 24Vin models: 2A delay time Type, 48Vin models: 1A delay time Type	
	INTERNAL POWER DISSIPATION	500mW	
OUTPUT	VOLTAGE ACCURACY	±1.5%	
	RATED POWER	10W	
	RIPPLE & NOISE Note.2	50mVp-p	
	LINE REGULATION Note.3	±0.2%	
	LOAD REGULATION Note.4	Single output models: ±0.2%, Dual output models: ±1%	
	SWITCHING FREQUENCY (Typ.)	350KHz	
	EXTERNAL TRIM ADJ. RANGE (Typ.)	±10% (Single output model only)	
PROTECTION	SHORT CIRCUIT	Protection type : Continuous, automatic recovery	
	OVERLOAD	110 ~ 140% rated output power	
	OVER VOLTAGE	Protection type : Recovers automatically after fault condition is removed	
	UNDER VOLTAGE LOCKOUT	Start-up voltage	5Vin: 4.4Vdc, 12Vin: 8.8Vdc, 24Vin: 17Vdc, 48Vin: 34Vdc
FUNCTION	SHUTDOWN voltage	5Vin: 4.2Vdc, 12Vin: 8Vdc, 24Vin: 16Vdc, 48Vin: 32Vdc	
	REMOTE CONTROL	Power ON: R.C. ~ -Vin > 5.5~75Vdc or open circuit ; Power OFF: R.C. ~ -Vin < 1.2Vdc or short	
ENVIRONMENT	COOLING	Free-air convection	
	WORKING TEMP.	-40 ~ +85°C (Refer to "Derating Curve")	
	CASE TEMPERATURE	+105°C max.	
	WORKING HUMIDITY	20% ~ 90% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-55 ~ +125°C, 10 ~ 95% RH non-condensing	
	TEMP. COEFFICIENT	0.03% / °C (0 ~ 71°C)	
	SOLDERING TEMPERATURE	1.5mm from case of 1 ~ 3sec./260°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 (EAC TP TC 004 for 48Vin type only) approved	
	WITHSTAND VOLTAGE	I/P-O/P:1.5KVDC	
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH	
	ISOLATION CAPACITANCE (Typ.)	1000pF	
	EMC EMISSION	Parameter	Standard
		Conducted	BS EN/EN55032(CISPR32)
		Radiated	BS EN/EN55032(CISPR32)
	EMC IMMUNITY	Parameter	Standard
		ESD	BS EN/EN61000-4-2
		Radiated Susceptibility	BS EN/EN61000-4-3
		EFT/Bursts	BS EN/EN61000-4-4
		Surge	BS EN/EN61000-4-5
		Conducted	BS EN/EN61000-4-6
		Magnetic Field	BS EN/EN61000-4-8
			Level 2, 3A/m
OTHERS	MTBF	1200Khrs MIL-HDBK-217F(25°C)	
	DIMENSION (L*W*H)	25.4*25.4*10.2mm (1*1*0.4 inch)	
	CASE MATERIAL	Black coated copper with Non-Conductive Base	
	PACKING	18.3g ; 12pcs/per tube, 600pcs/50 tube/per carton	
NOTE	1.All parameters are specified at normal input(E:5Vdc, A:12Vdc, B:24Vdc, C:48Vdc), 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 10% to 100% rated load. 5.The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a> ) ※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a>		

### 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. The output voltage trim range is  $\pm 10\%$ . This is shown in Figures 1 and 2:

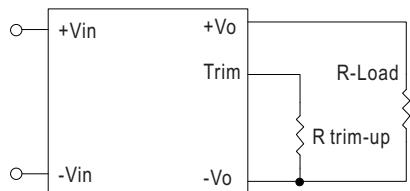


Figure 1. Trim-up Voltage Setup

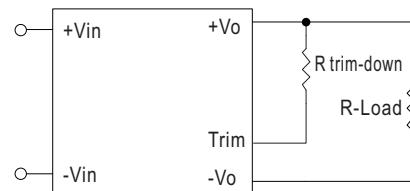


Figure 2. Trim-down Voltage Setup

#### 1. The value of Rtrim-up defined as:

$$R_{\text{trim-up}} = \left( \frac{V_r \times R1 \times (R2 + R3)}{(V_o - V_{o, \text{nom}}) \times R2} \right) - R_t (\text{K}\Omega)$$

Where

$R_{\text{trim-up}}$  is the external resistor in Kohm.

$V_{o, \text{nom}}$  is the nominal output voltage.

$V_o$  is the desired output voltage.

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

For example, to trim-up the output voltage of 5.0V module (SKM10A-05) by 10% to 5.5V, R trim-up is calculated as follows:

$$V_o - V_{o, \text{nom}} = 5.5 - 5.0 = 0.5\text{V}$$

$$R1 = 2.32 \text{ K}\Omega$$

$$R2 = 2.32 \text{ K}\Omega$$

$$R3 = 0 \text{ K}\Omega$$

$$Rt = 8.2 \text{ K}\Omega$$

$$Vr = 2.5\text{V}$$

$$R_{\text{trim-up}} = \left( \frac{2.5 \times 2.32 \times (2.32+0)}{0.5 \times 2.32} \right) - 8.2 = 3.4(\text{K}\Omega)$$

#### 2. The value of Rtrim-down defined as:

$$R_{\text{trim-down}} = R1 \times \left( \frac{V_r \times R1}{(V_{o, \text{nom}} - V_o) \times R2} - 1 \right) - R_t (\text{K}\Omega)$$

Where

$R_{\text{trim-down}}$  is the external resistor in Kohm.

$V_{o, \text{nom}}$  is the nominal output voltage.

$V_o$  is the desired output voltage.

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

For example, to trim-down the output voltage of 5.0V module (SKM10A-05) by 10% to 4.5V, R trim-down is calculated as follows:

$$V_{o, \text{nom}} - V_o = 5.0 - 4.5 = 0.5\text{V}$$

$$R1 = 2.32 \text{ K}\Omega$$

$$R2 = 2.32 \text{ K}\Omega$$

$$R3 = 0 \text{ K}\Omega$$

$$Rt = 8.2 \text{ K}\Omega$$

$$Vr = 2.5\text{V}$$

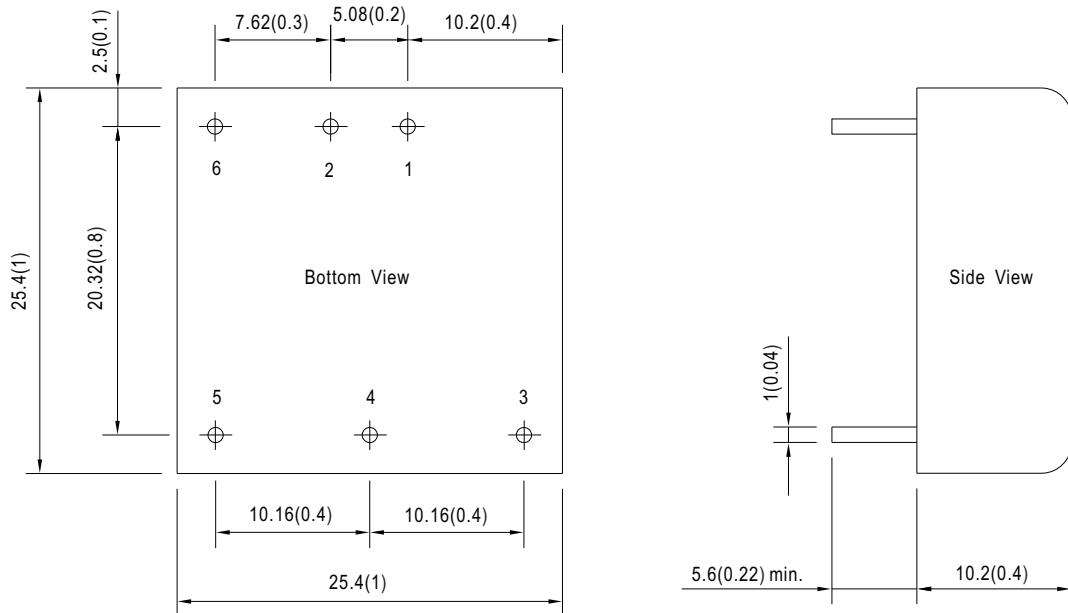
$$R_{\text{trim-down}} = 2.32 \times \left( \frac{2.5 \times 2.32}{0.5 \times 2.32} - 1 \right) - 8.2 = 1.08 (\text{K}\Omega)$$

Table 1 – Trim up and Trim down Resistor Values

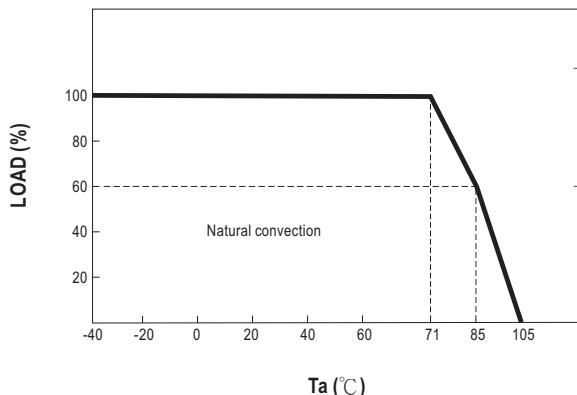
Model Number	Output Voltage(V)	R1 (K $\Omega$ )	R2 (K $\Omega$ )	R3 (K $\Omega$ )	Rt (K $\Omega$ )	Vr (V)
SKM10E-03						
SKM10A-03	3.3	2.70	1.8	0.27	9.1	1.25
SKM10B-03						
SKM10C-03						
SKM10E-05						
SKM10A-05	5	2.32	2.32	0	8.2	2.5
SKM10B-05						
SKM10C-05						
SKM10E-12						
SKM10A-12	12	6.8	2.4	2.32	22	2.5
SKM10B-12						
SKM10C-12						
SKM10E-15	15	8.06	2.38	3.9	22	2.5
SKM10A-15						
SKM10B-15	15	8.06	2.4	3.9	27	2.5
SKM10C-15						

**■ Mechanical Specification**

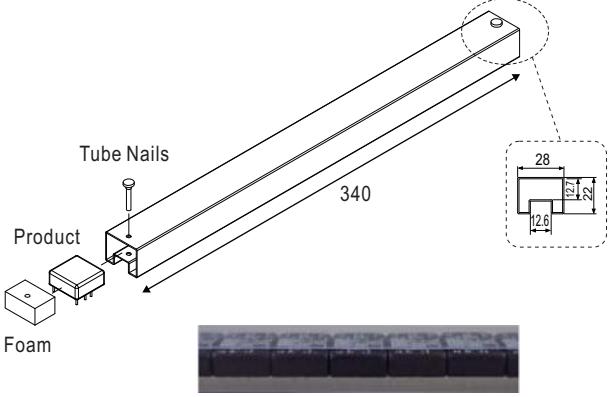
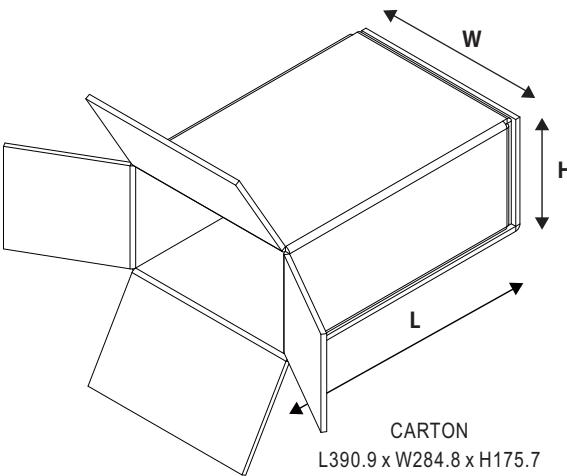
- All dimensions in mm(inch)
- Tolerance:  $x.x \pm 0.5\text{mm}$  ( $x.xx \pm 0.02\text{"}$ )
- Pin size is  $1 \pm 0.1\text{mm}$  ( $0.04" \pm 0.004"$ )


**■ Plug Assignment**

Pin-Out		
Pin No.	SKM10 (Single output)	DKM10 (Dual output)
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	Trim	Common
5	-Vout	-Vout
6	R.C.	R.C.

**■ Derating Curve**


**■ Packing**

Standard Tube Packing	MPQ Per Tube (PCS)	One Tube G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
<p>Unit : mm</p>  <p>Product</p> <p>Foam</p> <p>Tube Nails</p> <p>340</p> <p>28</p> <p>12.6</p> <p>Tube pattern</p>  <p>W</p> <p>H</p> <p>L</p> <p>CARTON L390.9 x W284.8 x H175.7</p>	12	255.6g	600	14.78Kg

**■ Installation Manual**

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