30W DC-DC Regulated Single Output Converter

SKM30 series

■ Features :

- 2"x1" compact size
- 2:1 wide input range
- High efficiency up to 90%
- 1500VDC I/O isolation
- Built-in remote ON/OFF control
- Built-in trimming output
- Comply with CE / FCC without external components
- Protections: Short circuit / Overload / Input and Output Over voltage
- Cooling by free air convection
- Six-sided shield metal case
- 100% burn-in test
- Low cost / High reliability
- Approvals: FCC / CE
- 2 years warranty

SPECIFICATION

ORDER NO.			SKM30A-05	SKM30B-05	SKM30C-05	SKM30A-12	SKM30B-12	SKM30C-12	SKM30A-15	SKM30B-15	SKM30C-15
OUTPUT	DC VOLTAGE		5V			12V			15V		
	CURRENT RANGE		0.6 ~ 6A			0.25 ~ 2.5A			0.2 ~ 2A		
	RATED POWER		30W								
	RIPPLE & NOISE (max.) Note.2		90mVp-p			120mVp-p			120mVp-p		
	LINE REGULATION Note.3		±0.2%								
	LOAD REGULATION Note.4		±0.5%								
	VOLTAGE ACCURACY		±2.0%								
	SWITCHING FREQUENCY		300KHz typ.								
	EXTERNAL CAPACITANCE LOAD (max.)		1000uF			220uF			100uF		
	EXTERNAL TRIM Adj. RANGE(Typ.)		±10%			-20 ~ +10%			-20 ~ +10%		
INPUT	VOLTAGE RANGE		A: 9 ~ 18VDC B: 18 ~ 36VDC C: 36 ~ 75VDC								
	UNDER VOLTAGE SHUTDOWN		A: 8VDC B: 16VDC C: 32VDC								
	EFFICIENCY (Typ.)		88%	88.5%	88%	89.5%	89%	89%	89.5%	90%	90%
	DC CURRENT	Full load	2840mA	1420mA	720mA	2810mA	1420mA	710mA	2800mA	1400mA	700mA
		No load	170mA	95mA	60mA	150mA	40mA	55mA	135mA	40mA	30mA
	FILTER		Pi network								
	REMOTE CONTROL		Power ON : R.C ~ -Vin > 2.5VDC or open circuit ; Power OFF : R.C ~ -Vin < 0.5VDC or short								
	PROTECTION		Fuse recommended								
PROTECTION (Note. 5)	OVER CURRENT		110% ~ 180% rated output power								
			Protection type : Hiccup mode, recovers automatically after fault condition is removed								
	SHORT CIRCUIT		All output equipped with short circuit								
			Protection type : Hiccup mode, recovers automatically after fault condition is removed								
	OVER VOLTAGE	Input(Typ.)	A: >20 ~ 25VDC B: >40 ~ 50VDC C: >80 ~ 100VDC input voltage Protection type : Shut down o/p voltage, recovers automatically after fault condition is removed								
		Output(Typ.)	5Vo : 7V ~ 8.95V ; 12Vo : 15V ~ 19.2V ; 15Vo : 18V ~ 23.3V Protection type : Clamp by TVS diode								
ENVIRONMENT	WORKING TEMP.		-40 ~ +75℃ (Refer to "Derating Curve")								
	WORKING HUMIDITY		20% ~ 90% RH non-condensing								
	STORAGE TEMP., HUMIDITY		-55 ~ +125℃, 10 ~ 95% RH								
	TEMP. COEFFICIENT		±0.03% / ℃ (0 ~ 50℃)								
	VIBRATION		10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes								
SAFETY & EMC	SAFETY STANDARDS		EAC TP TC 004 approved								
	WITHSTAND VOLTAGE		I/P-O/P:1.5KVDC								
	ISOLATION RESISTANCE		I/P-O/P: 100M Ohms / 500VDC / 25℃/ 70% RH								
	EMC EMISSION		Compliance to EN55032 Class A, FCC part 15 Class A without external components, EAC TP TC 020								
	EMC IMMUNITY		Compliance to EN61000-4-2,3,4,5,6,8, light industry level, criteria A, EAC TP TC 020								
OTHERS	MTBF		700Khrs min. MIL-HDBK-217F(25℃)								
	DIMENSION		50.8*25.4*11.2 mm or 2"*1"*0.44" inch (L*W*H)								
	WEIGHT		31.2g								

NOTE

1.All parameters are specified at normal input, rated load, 25℃ 70% RH ambient.
2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1uf & 47uf 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.Please prevent the converter from operating in overload or short circuit condition for more than 30 seconds.
※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

■ 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:

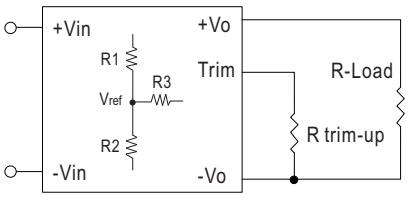


Figure 1. Trim-up Voltage Setup

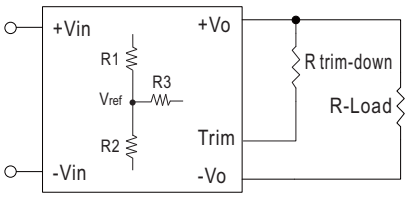


Figure 2. Trim-down Voltage Setup

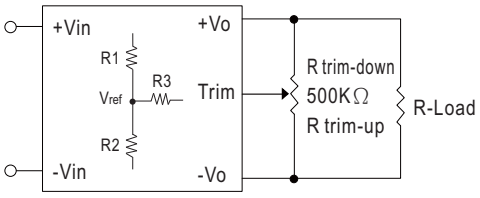


Figure 3. Trim-Connections

Table 1 – Trim up and Trim down Resistor Values

Vout	R1(KΩ)	R2(KΩ)	R3(KΩ)	Vref
3.3	1.69	1	5.6	1.25
5	1	1	4.3	2.5
12	3.83	1	7.5	2.5
15	7.5	1.5	11	2.5

1. The value of Rtrim-up defined as:

$A=[Vref/(V_o'-Vref)] *R1$

$R_{trim-up}=[(A*R2)/(R2-A)]-R3$

Where

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

V_o, nom is the nominal output voltage.

V_o' is the desired output voltage.

R1, R2, R3 and V_{ref} are internal to the unit and defined in Table 1.

For example, to trim-up the output voltage of 12V model (SKM30A-12) by 10% to 13.2V, $R_{trim-up}$ is calculated as follows:

$V_o' - V_{o,nom} = 13.2V - 12V = 1.2V$

R1 = 3.83 KΩ

R2 = 1 KΩ

R3 = 7.5 KΩ

Vref = 2.5V

$A=[Vref/(V_o'-Vref)] *R1$

$= [2.5/(13.2-2.5)]*3.83$

$=0.894$

$R_{trim-up}=[(A*R2)/(R2-A)]-R3$

$=[(0.894*1)/(1-0.894)]-7.5$

$=(0.894/0.106)-7.5$

$=8.433-7.5$

$=0.933K\Omega$

2. The value of Rtrim-down defined as:

$A=[(V_o'-V_{ref})/V_{ref}] *R2$

$R_{trim-down}=[(A*R1)/(R1-A)]-R3$

Where

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

V_o, nom is the nominal output voltage.

V_o' is the desired output voltage.

R1, R2, R3 and V_{ref} are internal to the unit and defined in Table 1.

For example, to trim-down the output voltage of 12V model (SKM30A-12) by 10% to 10.8V, $R_{trim-down}$ is calculated as follows:

$V_{o,nom} - V_o' = 12V - 10.8V = 1.2V$

R1 = 3.83 KΩ

R2 = 1 KΩ

R3 = 7.5 KΩ

Vref = 2.5V

$A=[(V_o'-V_{ref})/V_{ref}] *R2$

$= [(10.8-2.5)/2.5]*1$

$=3.32$

$R_{trim-down}=[(A*R1)/(R1-A)]-R3$

$=[(3.32*3.83)/(3.83-3.32)]-7.5$

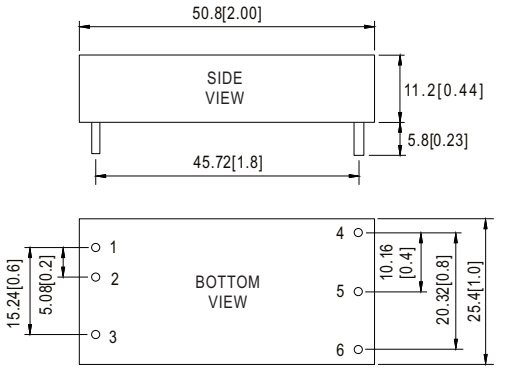
$=(12.715/0.51)-7.5$

$=24.931-7.5$

$=17.431K\Omega$

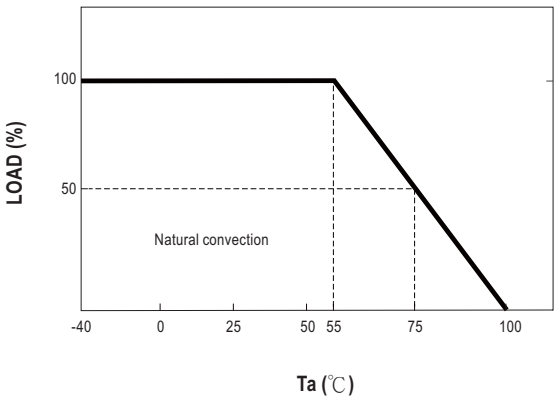
■ Mechanical Specification

Unit:mm(inch)



Note : Pin size tolerance 1 ϕ ±0.1mm

■ Derating Curve



■ Pin Configuration

Pin No.	Output	Pin No.	Output
1	+Vin	4	+Vout
2	-Vin	5	-Vout
3	R.C	6	Trim