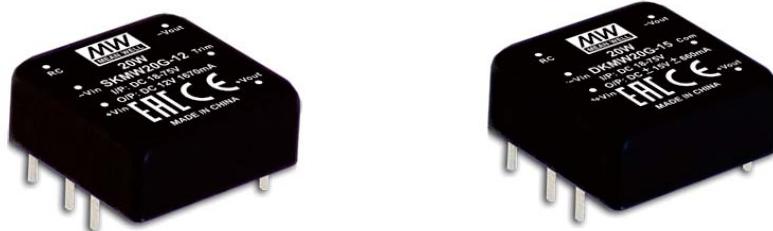




20W 1"x1" Package DC-DC Regulated Converter

SKMW20 & DKMW20 series

■ Features

- DIP 1"x1" package with industry standard pinout
- 4:1 ultrawide 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 89%
- 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

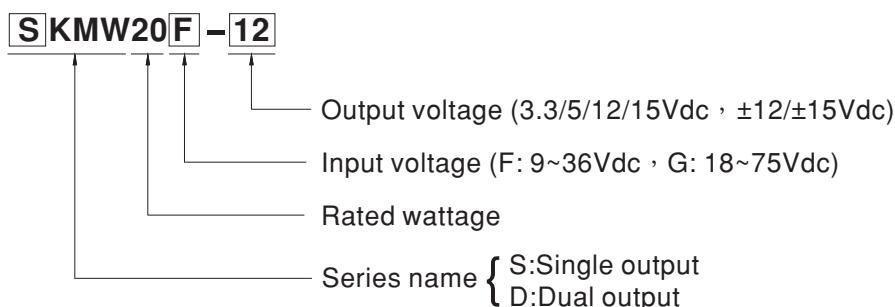
■ Applications

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

■ Description

SKMW20 and DKMW20 series are 20W isolated and regulated module type DC-DC converter with DIP 1"x1" package. It features international standard pins, a high efficiency up to 89%, 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, overload, over temperature, input under voltage protection, remote ON/OFF and trimmable output voltage etc. The models account for different input voltage 9~36V and 18~75V 4:1 ultrawide input range, and various output voltage, 3.3V/5V/12V/15V for single output and $\pm 12V/\pm 15V$ 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





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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						
SKMW20F-03	24V (9 ~ 36V)	10mA	781mA	3.3V	0~4500mA	87%	5000µF		
SKMW20F-05		10mA	926mA	5V	0~4000mA	89%	4000µF		
SKMW20F-12		10mA	936mA	12V	0~1670mA	88%	1650µF		
SKMW20F-15		10mA	936mA	15V	0~1330mA	88%	1300µF		
DKMW20F-12		10mA	936mA	±12V	±0 ~ 830mA	87%	*800µF		
DKMW20F-15		10mA	936mA	±15V	±0 ~ 660mA	87%	*650µF		
SKMW20G-03	48V (18 ~ 75V)	8mA	390mA	3.3V	0~4500mA	87%	5000µF		
SKMW20G-05		8mA	463mA	5V	0~4000mA	87%	4000µF		
SKMW20G-12		8mA	463mA	12V	0~1670mA	89%	1650µF		
SKMW20G-15		8mA	468mA	15V	0~1330mA	88%	1300µF		
DKMW20G-12		8mA	473mA	±12V	±0 ~ 830mA	87%	*800µF		
DKMW20G-15		8mA	468mA	±15V	±0 ~ 660mA	88%	*650µF		

* For each output

SPECIFICATION			
INPUT	VOLTAGE RANGE	F: 9~36Vdc , G: 18~75Vdc	
	SURGE VOLTAGE (100ms max.)	24Vin models : 50Vdc, 48Vin models : 100Vdc	
	FILTER	Pi type	
	PROTECTION	Fuse recommended. 24Vin models: 3A delay time Type, 48Vin models: 1.5A delay time Type	
	INTERNAL POWER DISSIPATION	500mW	
OUTPUT	VOLTAGE ACCURACY	±1.5%	
	RATED POWER	20W	
	RIPPLE & NOISE Note.2	3.3/5Vout models: 75mVp-p, other models:100mVp-p	
	LINE REGULATION Note.3	±0.2%	
	LOAD REGULATION Note.4	Single output models: ±0.2%, Dual output models: ±1%	
	SWITCHING FREQUENCY (Typ.)	3.3/5Vout models: 270KHz, other models: 330KHz	
	EXTERNAL TRIM ADJ. RANGE (Typ.)	±10% (Single output model only)	
PROTECTION	SHORT CIRCUIT	Protection type : Continuous, automatic recovery	
	OVERLOAD	110 ~ 170% rated output power	
		Protection type : Recovers automatically after fault condition is removed	
	OVER VOLTAGE	Protection type : Clamp by diode	
	UNDER VOLTAGE LOCKOUT	Start-up voltage	24Vin (F-type): 8.8Vdc, 48Vin (G-type): 17Vdc
		Shutdown voltage	24Vin (F-type): 8Vdc, 48Vin (G-type): 16Vdc
FUNCTION	REMOTE CONTROL	Power ON: R.C. ~ -Vin >3.5~75Vdc 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 ~ 60°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.)	1500pF	
	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/Burst	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	3.3/5Vout models: 910Khrs, Other models: 1220Khrs 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	18g	
NOTE	1.All parameters are specified at normal input(F:24Vdc, G: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 0% 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 http://www.meanwell.com) ※ 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. The output voltage trim range is $\pm 10\%$. This is shown in Figures 1 and 2:

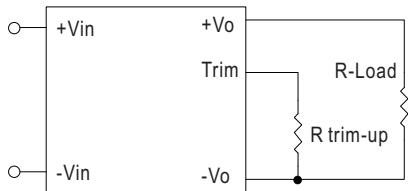


Figure 1. Trim-up Voltage Setup

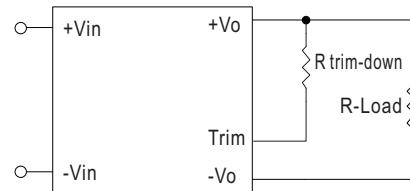


Figure 2. Trim-down Voltage Setup

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.

$R1, R_t, R2, R3$ and V_r are internal to the unit and are defined in Table 1.

Table 1 – Trim up and Trim down Resistor Values

Model Number	Output Voltage(V)	R1 (K Ω)	R2 (K Ω)	R3 (K Ω)	Rt (K Ω)	Vr (V)
SKMW20F-03 SKMW20G-03	3.3	2.74	1.8	0.27	9.1	1.24
SKMW20F-05 SKMW20G-05	5.0	2.32	2.32	0	8.2	2.5
SKMW20F-12 SKMW20G-12	12.0	6.8	2.4	2.32	22	2.5
SKMW20F-15 SKMW20G-15	15.0	8.06	2.4	3.9	27	2.5

For example, to trim-up the output voltage of 5.0V module (SKMW20F-05) by 10% to 5.5V, $R_{\text{trim-up}}$ 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.

$R1, R_t, R2, R3$ and V_r are internal to the unit and are defined in Table 1.

For example, to trim-down the output voltage of 5.0V module (SKMW20F-05) by 10% to 4.5V, $R_{\text{trim-down}}$ is calculated as follows:

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

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

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

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

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

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

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

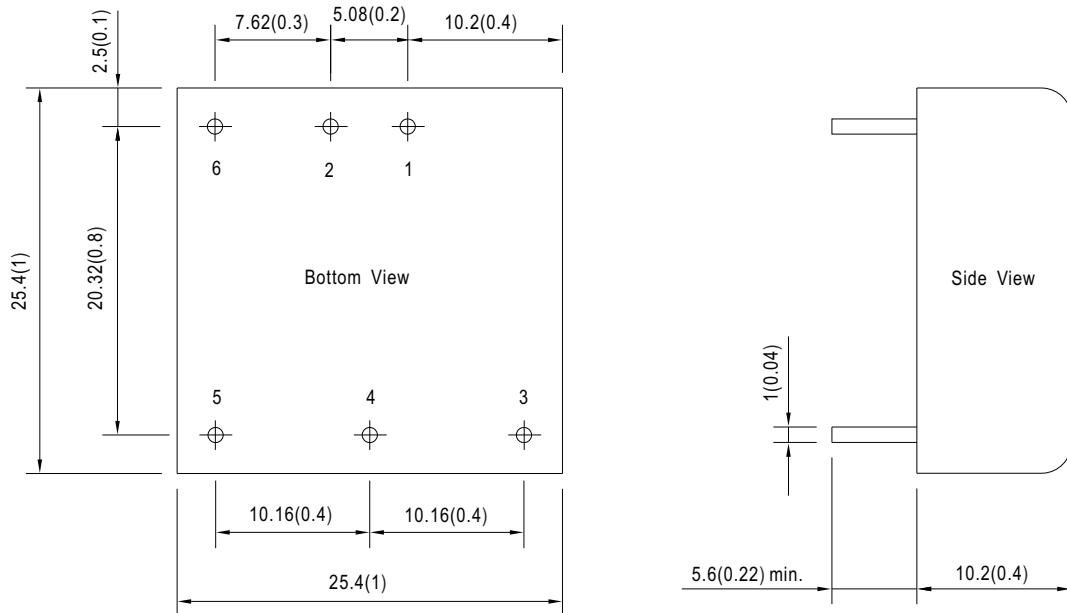


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SKMW20 & DKMW20 series

■ Mechanical Specification

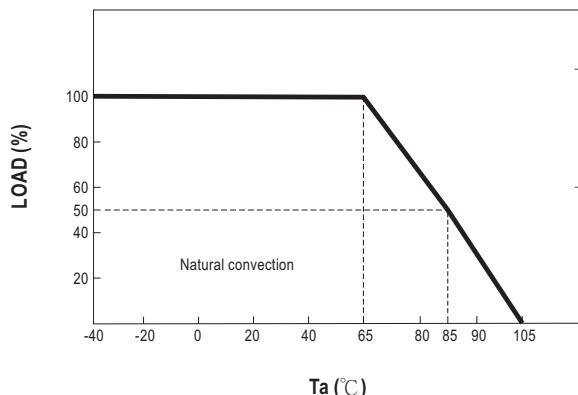
- All dimensions in mm(inch)
- Tolerance: $x.x \pm 1\text{mm}$ ($x.xx \pm 0.25''$)
- Pin size is $1 \pm 0.1\text{mm}$ ($0.04'' \pm 0.004''$)



■ Plug Assignment

Pin-Out		
Pin No.	SKMW20 (Single output)	DKMW20 (Dual output)
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	Trim	Common
5	-Vout	-Vout
6	R.C.	R.C.

■ Derating Curve



■ Installation Manual

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