

Features

Regulated Converters

- 6-Side Shielding
- External ON/OFF control
- 1.6kVDC Isolation
- UL/CSA/EN-60950-1 (Pending)
- 2:1 Input Voltage Range
- Continuous Short Circuit Protection
- Efficiency up to 90%
- Fixed Switching Frequency

RECOM
DC/DC Converter

REC30

30 Watt
2" x 1.6"
Single and Dual Output



Description

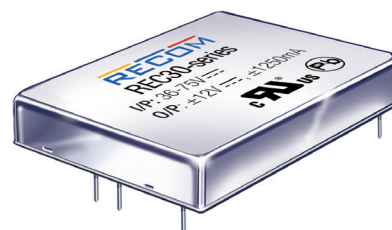
The REC30-xxxxS_D -series offer single and dual regulated outputs in a 2"x1.6" package with 1.6kVDC isolation and are suitable for higher power industrial applications. Remote on/off control is standard. The higher current outputs have raised output voltages to compensate for track losses as standard. The converter is fully certified to UL/EN/IEC safety standards.

Selection Guide

Part Number	Input Voltage Range (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ. (%)	max. Capacitive Load ⁽¹⁾ (μF)
REC30-123.4S	9-18	3.4	6000	85	10000
REC30-125.1S	9-18	5.1	6000	87	6800
REC30-1212S	9-18	12	2500	89	1800
REC30-1215S	9-18	15	2000	88	1000
REC30-1212D	9-18	±12	±1250	87	±800
REC30-1215D	9-18	±15	±1000	88	±500
REC30-243.4S	18-36	3.4	6000	87	10000
REC30-245.1S	18-36	5.1	6000	89	6800
REC30-2412S	18-36	12	2500	90	1800
REC30-2415S	18-36	15	2000	89	1000
REC30-2412D	18-36	±12	±1250	88	±800
REC30-2415D	18-36	±15	±1000	89	±500
REC30-483.4S	36-75	3.4	6000	87.5	10000
REC30-485.1S	36-75	5.1	6000	89.5	6800
REC30-4812S	36-75	12	2500	90	1800
REC30-4815S	36-75	15	2000	90.5	1000
REC30-4812D	36-75	±12	±1250	89	±800
REC30-2415D	36-75	±15	±1000	90.5	±500

Notes:

Note1: Max. capacitive load is tested at nominal input voltage and full load.



UL
E224736

IEC/EN60950-1 (Pending)
UL60950 (Pending)
CSA C22.2 NO. 60950 (Pending)
EN55022 Certified

Model Numbering



Notes:

Note2: **2:1**
 12 = 9-18Vin
 24 = 18-36Vin
 48 = 36-75Vin

Examples:

e.g. REC30-1212S, Single Output, 9-18Vin (2:1) and 12Vout
e.g. REC30-2412D, Dual Output, 18-36Vin (2:1) and ±12Vout

Refer to Applications Notes

Specifications (measured at $T_a = 25^\circ\text{C}$, nominal input voltage, full load and after warm up unless otherwise specified)

BASIC CHARACTERISTICS

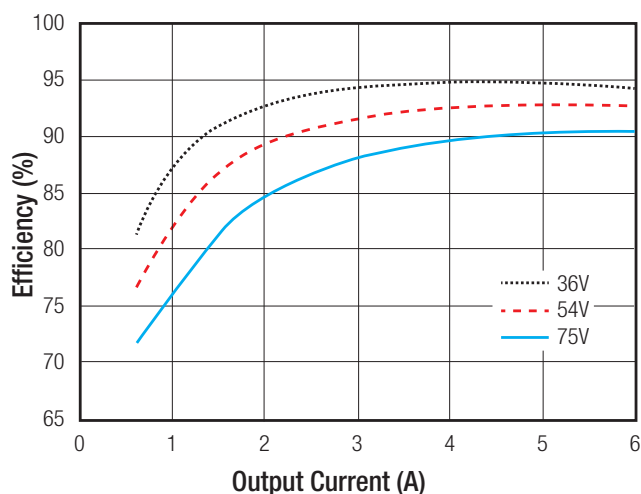
Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range	12V 24V 48V	9VDC 18VDC 36VDC		18VDC 36VDC 75VDC
Start/up Time			10mS	
Under Voltage Lockout	12V DC-DC ON DC-DC OFF		8.3VDC 7.9VDC	
	24V DC-DC ON DC-DC OFF		17.4VDC 16.7VDC	
	48V DC-DC ON DC-DC OFF		35.7VDC 34.3VDC	
Remot ON/OFF	DC-DC ON DC-DC OFF			Open or $3V < V_r < 12V$ Short or $0V < V_r < 1.2V$
Operating Frequency			300kHz	
Minimum Load			0%	
Output Ripple and Noise ⁽⁴⁾			100mVp-p	

Notes:

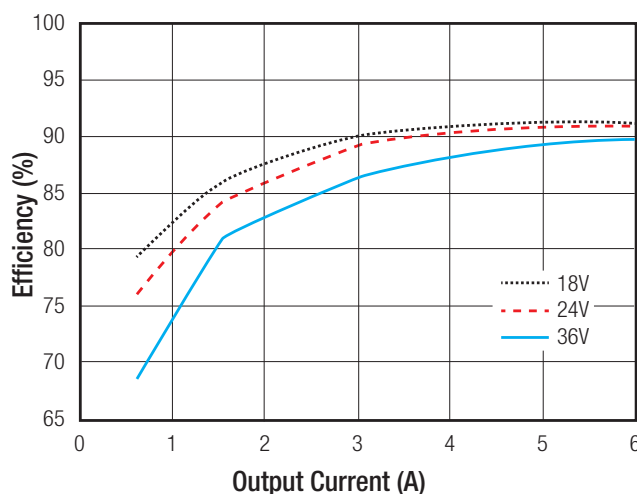
Note4: Ripple and Noise is measured with a 20MHz bandwidth and a 0.1 μ F ceramic capacitor.

Efficiency vs. Load

REC30-485.1S



REC30-2415D



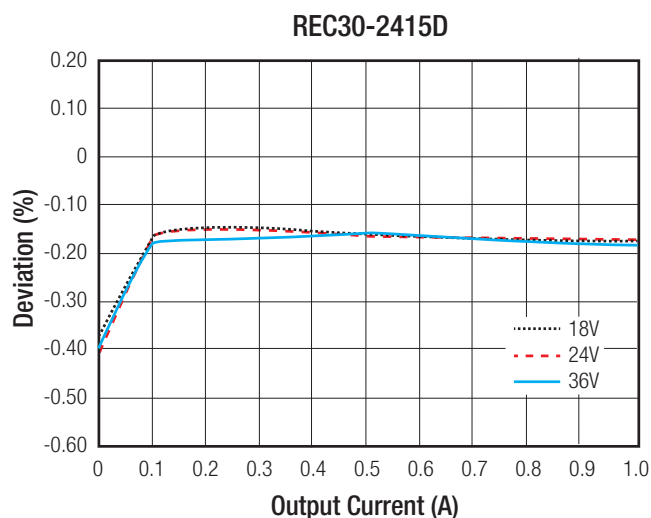
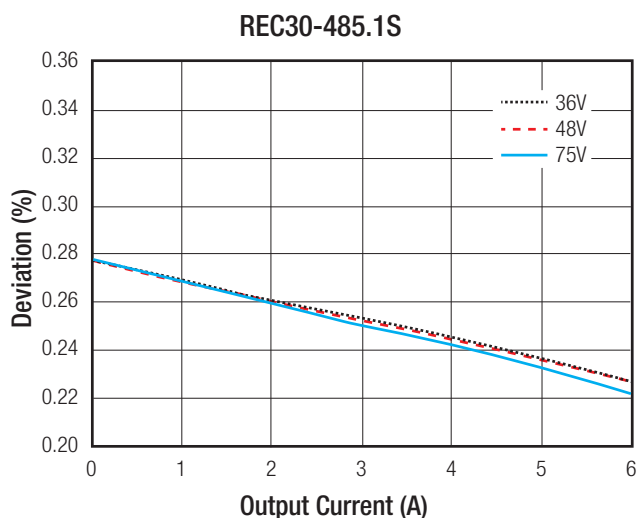
REGULATIONS

Parameter	Condition	Type	Values
Output Voltage Accuracy			$\pm 1\%$ max.
Voltage Adjustability			$\pm 10\%$ max.
Line Voltage Regulation	low line to high line, full load		$\pm 0.2\%$ max.
Load Voltage Regulation	10% to 100% load	single output	$\pm 0.5\%$ max.
		dual output	$\pm 1\%$ max.
Cross Regulation	25% to 100% load	dual output	$\pm 5\%$ max.
Transient Response Recovery Time	25% load step change		250 μ S typ.

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Specifications (measured at $T_a = 25^\circ\text{C}$, nominal input voltage, full load and after warm up unless otherwise specified)

Deviation vs. Load



PROTECTIONS

Parameter	Condition	Value
Short Circuit Protection (SCP)		continuous, automatic recovery
Over Voltage Protection (OVP)	3.4Vout	4VDC typ.
	5.1Vout	6.2VDC typ.
	12Vout	15VDC typ.
	15Vout	18VDC typ.
Over Load Protection (OLP)		180% typ.
Isolation Voltage	I/P to O/P	1.6kVDC / 1 minute
Isolation Capacitance		3300pF typ.
Isolation Resistance		1GΩ min.

ENVIRONMENTAL

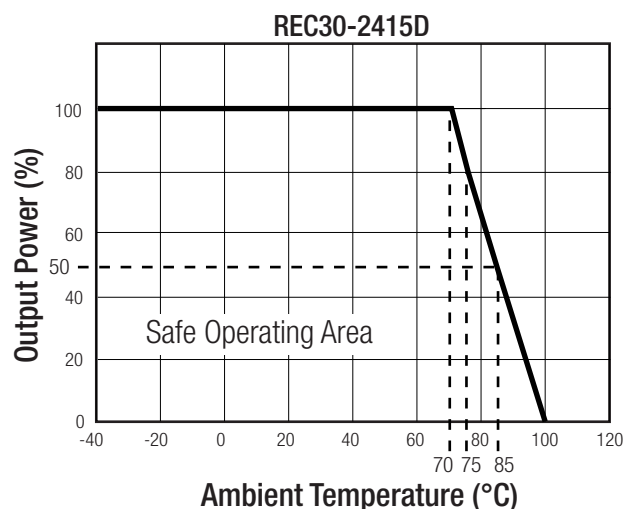
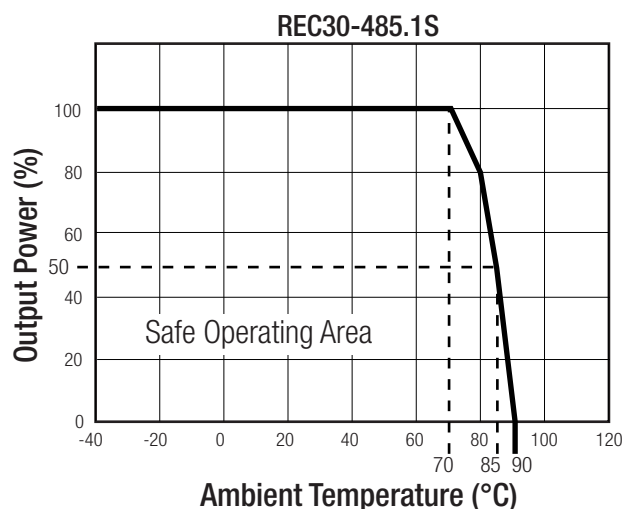
Parameter	Condition	Value
Operating Temperature Range	with derating	-40°C to +85°C
Maximum Case Temperature		+105°C
Temperature Coefficient		±0.05%/°C
Operating Humidity	non-condensing	5% - 95% RH max.
Vibration		MIL-STD-202G
MTBF	according to MIL-HDBK-217F, 25°C	529 x 10 ³ hours

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Specifications (measured at $T_a = 25^\circ\text{C}$, nominal input voltage, full load and after warm up unless otherwise specified)

Derating Graph

@ nominal input voltage, full load and natural convection (20LFM)



Notes:

Note5: For more details, please contact our technical support service at TechsupportAT@recom-power.com

SAFETY AND CERTIFICATIONS

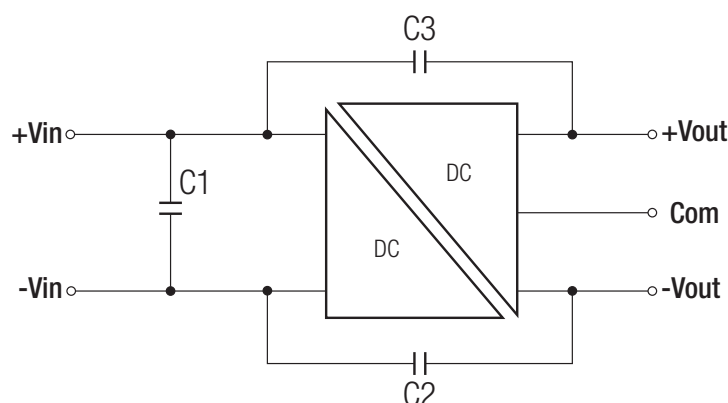
Certificate Type	Report / File Number	Standard
CB General Safety	E224736	IEC60950-1, 2nd Edition, 2013
UL General Safety		UL60950-1, 2nd Edition, 2014
EN General Safety		EN60950-1, 2nd Edition, 2013
CAN/CSA General Safety		C22.2 No. 60950-1-07, 2014

EMC Compliance	Condition	Standard / Criterion
EMI ⁽⁶⁾	with external filter (see filter suggestions)	EN55022, Class A,B
ESD	Air: $\pm 8\text{kV}$; Contact: 4kV	EN61000-4-2, Criteria B
Radiated Immunity	10V/m	EN61000-4-3, Criteria A
Fast Transient	$\pm 1\text{kV}$	EN61000-4-4, Criteria B
Surge ⁽⁷⁾	$\pm 1\text{kV}$	EN61000-4-5, Criteria A
Conducted Immunity	10Vr.m.s	EN61000-4-6, Criteria A
Power Magnetic Field	$50\text{Hz } 1\text{A/m (r.m.s)}$	EN61000-4-8, Criteria A

Notes:

Note7: An external MOV is required if the module has to meet EN61000-4-5. The MOV suggest: NichTek SV132-380

EMC Filtering - Suggestions for Class A

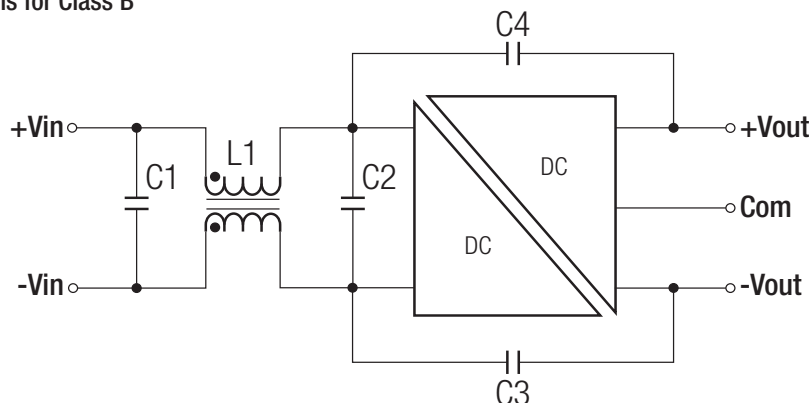


MODEL	C1	C2	C3
REC30-12xxS	330 $\mu\text{F}/50\text{V}$	2200pF/3kV	NA
REC30-24xxS	330 $\mu\text{F}/50\text{V}$	2200pF/3kV	NA
REC30-48xxS	330 $\mu\text{F}/100\text{V}$	2200pF/3kV	NA
REC30-12xxD	330 $\mu\text{F}/50\text{V}$	2200pF/3kV	2200pF/3kV
REC30-24xxD	330 $\mu\text{F}/50\text{V}$	2200pF/3kV	2200pF/3kV
REC30-48xxD	330 $\mu\text{F}/100\text{V}$	2200pF/3kV	2200pF/3kV

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Specifications (measured at $T_a = 25^\circ\text{C}$, nominal input voltage, full load and after warm up unless otherwise specified)

EMC Filtering - Suggestions for Class B

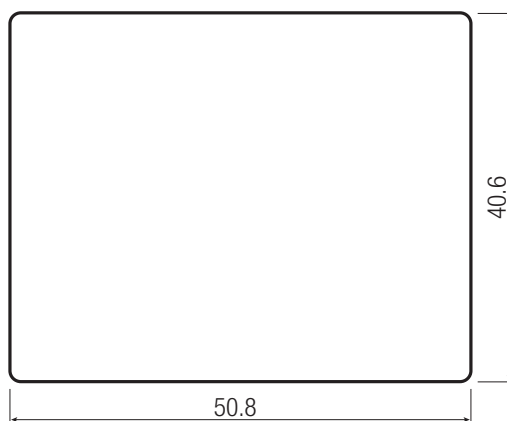


MODEL	C1	C2	L1	C3	C4
REC30-12xxS	330 μ F/50V	10 μ F/50V	1.3mH ref.:	2200pF/3kV	NA
REC30-24xxS	330 μ F/50V	10 μ F/50V	1.3mH ref.:	2200pF/3kV	NA
REC30-48xxS	330 μ F/100V	10 μ F/100V	1.3mH ref.:	2200pF/3kV	NA
REC30-12xxD	330 μ F/50V	10 μ F/50V	1.3mH ref.:	2200pF/3kV	2200pF/3kV
REC30-24xxD	330 μ F/50V	10 μ F/50V	1.3mH ref.:	2200pF/3kV	2200pF/3kV
REC30-48xxD	330 μ F/100V	10 μ F/100V	1.3mH ref.:	2200pF/3kV	2200pF/3kV

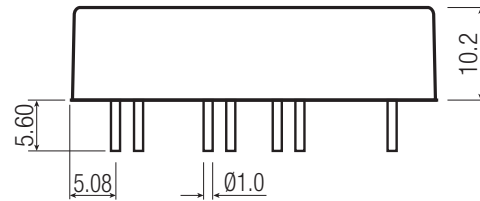
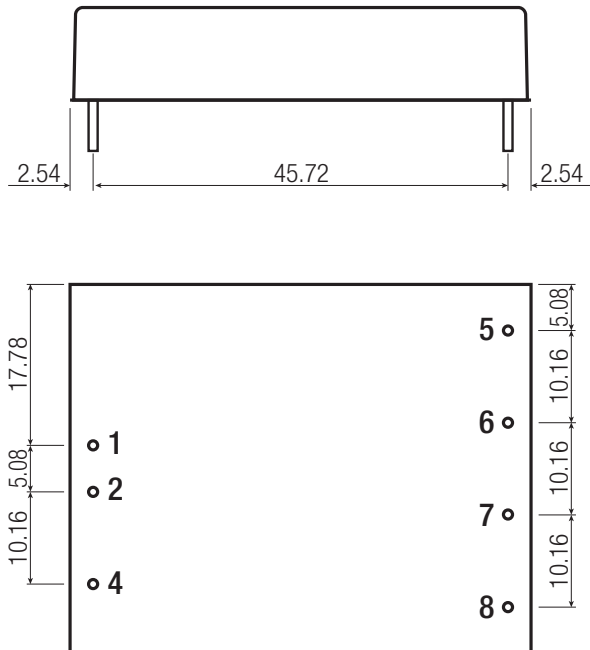
DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	Case Base Potting	Nickel plated copper non conductive black plastic (UL94V-0) Epoxy
Package Dimension (LxWxH)		50.8 x 40.6 x 10.2mm
Package Weight		48g

Dimension Drawing (mm)



Specifications (measured at $T_a = 25^\circ\text{C}$, nominal input voltage, full load and after warm up unless otherwise specified)



Pin Connections

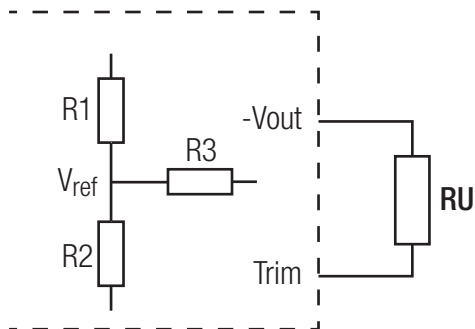
Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
4	Remote ON/OFF	
5	No Pin	+Vout
6	+Vout	Com
7	-Vout	-Vout
8	Trim	Trim

Tolerance: xx.x= $\pm 0.5\text{mm}$
 xx.xx= $\pm 0.35\text{mm}$
 Pin: $\pm 0.05\text{mm}$

INSTALLATION and APPLICATION

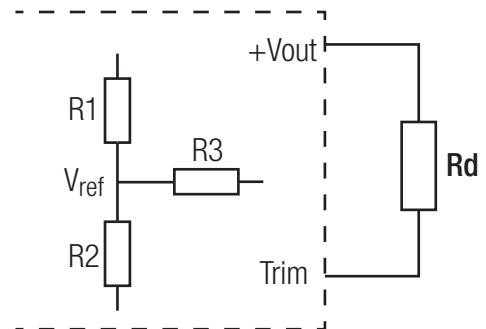
External Output Voltage Trimming

Trim up



$$RU = \frac{aR2}{R2-a} - R3 \quad a = \frac{Vref}{V0 - Vref} \times R1$$

Trim down



$$Rd = \frac{bR1}{R1-b} - R3 \quad b = \frac{Vref}{V0 - Vref} \times R2$$

Notes:

- Note8: RU and Rd is mean trim resistor, please check the formula.
- Note9: a & b: user define parameter, no actual meanings.
- Note10: V0 is mean trim up/down voltage.
- Notw11: Value for R1, R2, R3 and Vref refer to table.

Output Voltage	3.4V	5.1V	12V	15V
R1	2.1K	2.55K	9.53K	9.09K
R2	1.198561K	2.449341K	2.498617K	1.810845K
R3	6.8K	9.76K	16.9K	13K
Vref	1.240	2.500	2.500	2.500

Specifications (measured at $T_a = 25^\circ\text{C}$, nominal input voltage, full load and after warm up unless otherwise specified)

PACKAGING INFORMATION

Packaging Dimension (LxWxH)	Tube	54.5 x 20.8 x 520.0mm
Packaging Quantity		11pcs
Storage Temperature Range		-55°C to +125°C

Tube Dimension Drawing (mm)

