

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS

Parameter	Condition		Min.	Typ.	Max.
Input Voltage Range ⁽⁴⁾	nom. Vin = 230VAC		90VAC 120VDC	230VAC	264VAC 370VDC
Input Current	115VAC 230VAC				520mA 320mA
Inrush Current	2ms max., cold start	115VAC	standard with suffix "-E"		10A 23A
		230VAC	standard with suffix "-E"		20A 46A
No load Power Consumption	115VAC/230VAC				2.58W
Input Frequency Range	AC Input		47Hz		440Hz
Hold-up Time			15ms		
Minimum Load	Single Dual Double, Triple		5%(3.3Vout), 8%(5Vout), 2%(12Vout,15Vout,24Vout) 2%(±5Vout), 3%(±12Vout), 1%(±15Vout) 20%		
Internal Operating Frequency				100kHz	
Output Ripple and Noise ⁽⁵⁾	20MHz BW	Noise Ripple	<0.5% Vout + 50mVp-p max. <0.2% Vout + 40mVp-p max.		

Notes:

Note4: The products were submitted for safety files at AC-Input operation

Note5: Measurements are made with a 0.1µF and 47µF MLCC in parallel across output (low ESR)

REGULATIONS

Parameter	Condition		Value
Output Accuracy			±2.0% typ.
Line Regulation ⁽⁶⁾	low line to high line	Single, Dual Triple	±1.0% typ. ±1.0% typ. (+5Vout) / ±5.0 typ. (±Vout)
Load Regulation ⁽⁷⁾	5% to 100% load	Single	1.0% typ.
		Dual Triple	3.0% typ. 2.0% typ. (+5Vout) / 6.0 typ. (±Vout)

Notes:

Note6: Triple output version has +/- Vout common that isn't connected to +5V return pin internally

Note7: Operation below 5% load will not harm the converter, but specifications may not be met

PROTECTIONS

Parameter	Type		Value
Short Circuit Protection (SCP)			Hiccup mode, auto recovery
Over Voltage Protection (OVP)			zener diode clamp
Isolation Voltage	I/P to O/P	tested for 1 minute	3kVAC
Isolation Resistance			100MΩ max.
Leakage Current			0.75mA max.

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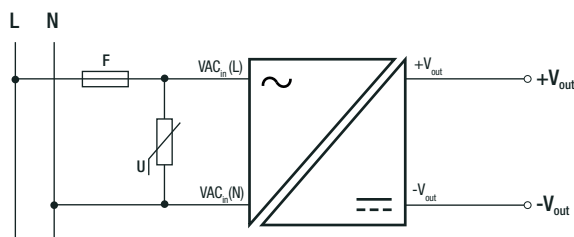
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Notes:

Note8: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Note9: An external MOV is recommended. The varistor should comply with IEC-61051-2. e.g. 14S471K series

Protection Circuit



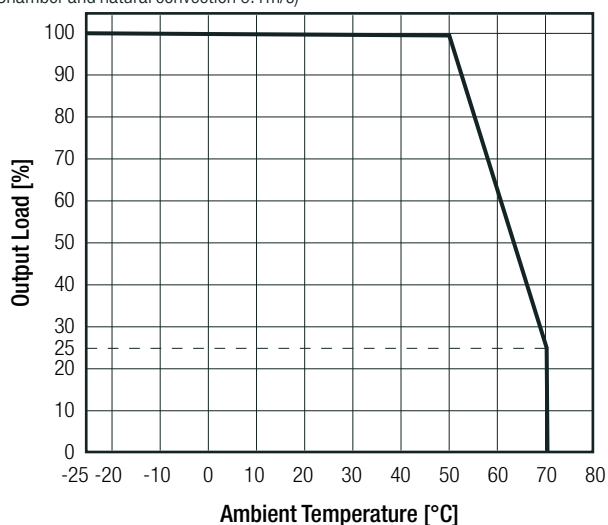
ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	@ natural convection 0.1m/s	standard	-25°C to +70°C
		with suffix "-E"	-40°C to +70°C
Temperature Coefficient			±0.02%/K typ.
Operating Humidity			95% RH max.
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	>200 x 10 ³ hours

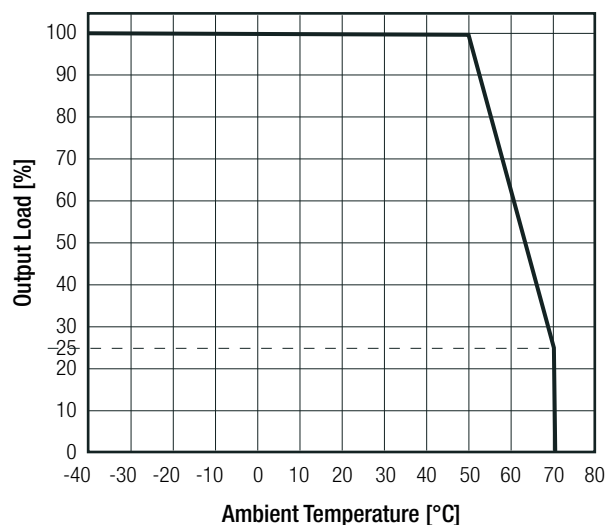
Derating Graph

(@ Chamber and natural convection 0.1m/s)

standard



with suffix „-E“



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	E196683	UL60950-1, 2nd Edition, 2007 CAN/CSA-C22.2 No. 60950-1-07, 2nd Edition, 2007
Information Technology Equipment, General Requirements for Safety		EN60950-1:2006 + A2:2013
EAC Safety of Low Voltage Equipment	RU-AT.49.09571	TP TC 004/2011
RoHS2+		RoHS-2011/65/EU + AM-2015/863

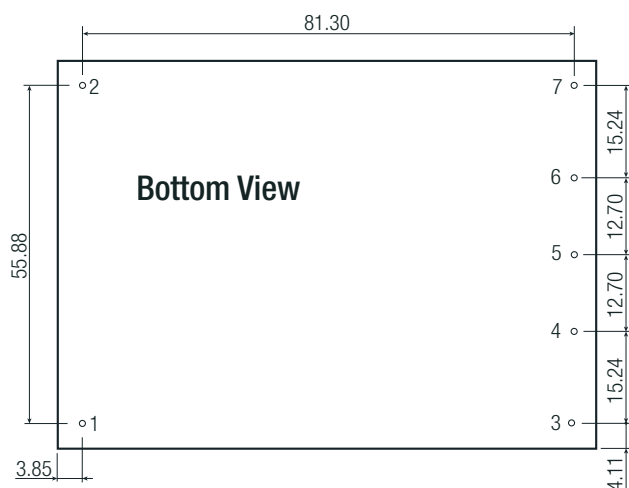
EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment – Emission Requirements		EN55032:2015, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024:2010 + A1:2015
Limits for harmonic current emissions		EN61000-3-2, 2014
Limitation of voltage fluctuations/flicker in low-voltage systems		EN61000-3-3, 2013

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DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case	epoxy with fibreglass (UL94V-0)
Dimension (LxWxH)	standard	89.0 x 64.1 x 25.0mm
	with suffix "-ST"	111.9 x 64.6 x 30.6mm
Weight	standard	230g typ.
	with suffix "-ST"	305g typ.

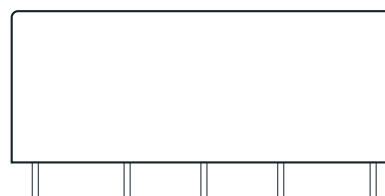
Dimension Drawing (mm)



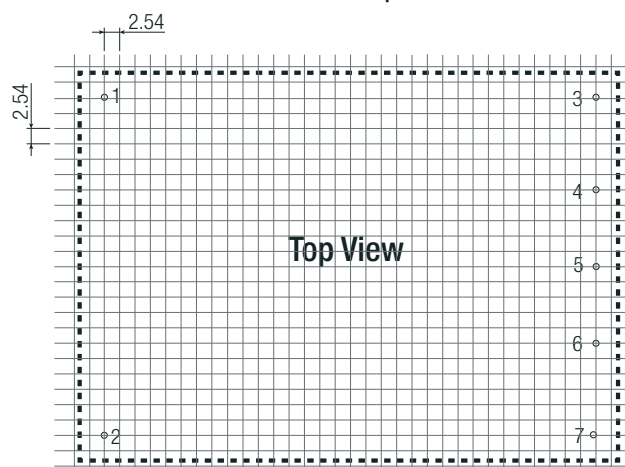
Pin Connections

Pin #	Single	Dual	Double	Triple
1	VAC in (N)	VAC in (N)	VAC in (N)	VAC in (N)
2	VAC in (L)	VAC in (L)	VAC in (L)	VAC in (L)
3	+Vout	+Vout	+12Vout	+Vout
4	no Pin	no Pin	+5Vout	+5Vout
5	-Vout	Com	+12V Rth	Vout Com
6	no Pin	no Pin	+5V Rth	+5V Rth
7	NC	-Vout	no Pin	-Vout

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm



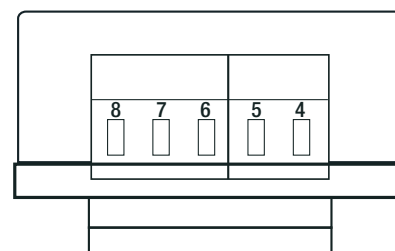
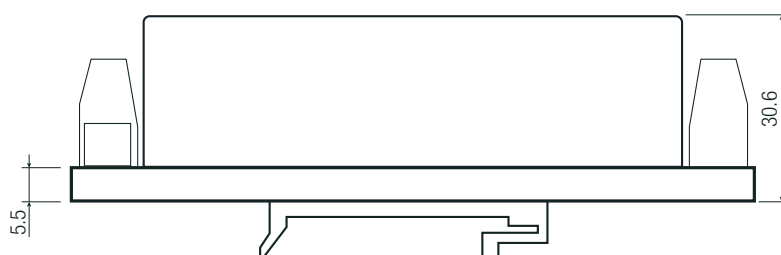
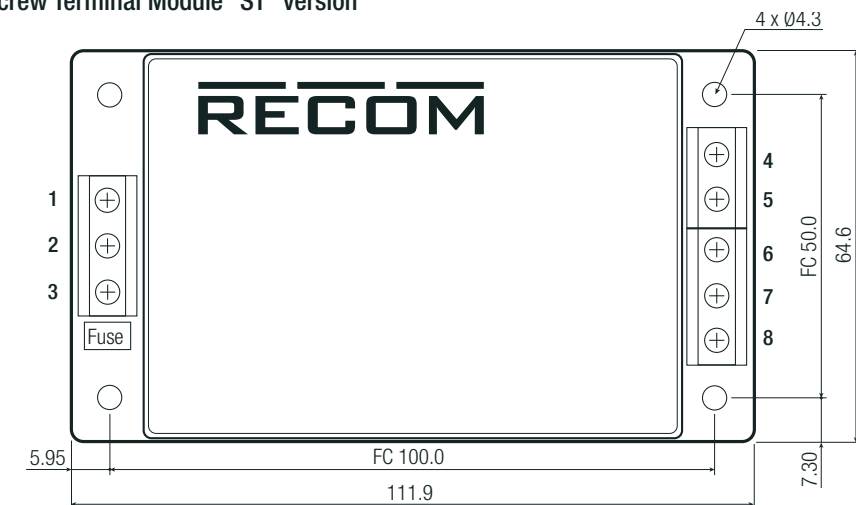
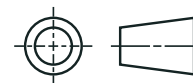
Recommended Footprint Details



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Screw Terminal Module "ST" version



removable DIN RAIL Mounting Bracket

Screw terminal information

#	Single	Dual	Double	Triple
1	NC	NC	NC	NC
2	VAC in (N)	VAC in (N)	VAC in (N)	VAC in (N)
3	VAC in (L)	VAC in (L)	VAC in (L)	VAC in (L)
4	+Vout	+Vout	+12Vout	+Vout
5	NC	NC	+5Vout	+5Vout
6	-Vout	Com	+12V Rth	Com
7	NC	NC	+5V Rth	+5V Rth
8	NC	-Vout	NC	-Vout

7.5mm Pitch
suitable wire: 24-12AWG (0.5-2.5mm²)
wire stripping length: 7mm typ.
recommended tightening torque: 0.5Nm

NC = No Connection
FC = Fixing Centers
Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm

PACKAGING INFORMATION

Parameter	Type		Value
Packaging Dimension (LxWxH)	cardboard box	standard with suffix "-ST"	260.0 x 70.0 x 42.0mm 119.0 x 64.0 x 54.0mm
Packaging Quantity	standard with suffix "-ST"		2pcs 1pcs
Storage Temperature Range			-40°C to +85°C
Storage Humidity	non-condensing		95% RH

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