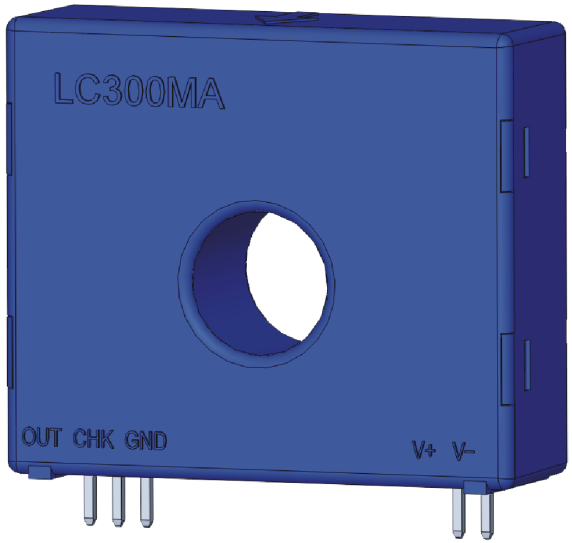
RCMU101 series

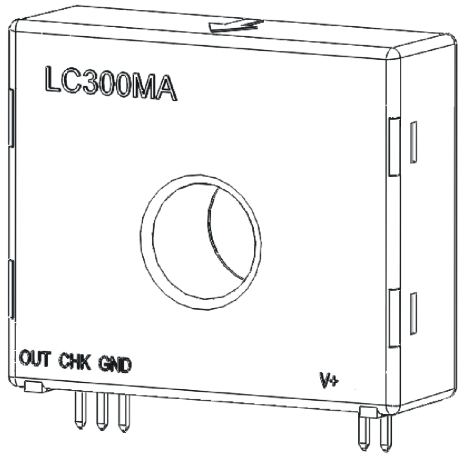
Residual Current Monitoring Unit



Rev 1.2.2

RCMU101 series

Residual Current Monitoring Unit with ±12V~±15V or +5V Supply Voltage



For electronic current detect: DC, AC, pulsed, mixed ...,with a galvanic isolation between primary circuit (high power) and secondary circuit (electronic circuit)

Features

- Capability up to ±600mA
- Self-check function
- Positive output for ADC
- Printed circuit board mounting
- Casing and materials UL-listed

Characteristics

- Stable accuracy
- Self stimulation
- Low hysteresis offset voltage
- Short response time
- Integration frequency filter
- Compact design

Applications

- Appliance ground fault detection
- Solar inverter residual current
- Converter leakage current detection
- UPS and other power ground fault detection
- Electric vehicle charge station
- Single or 3 phases differential current detection

Magtron Holdings USA, Inc Tel: 86 21 5268 5277 Fax: 86 21 5268 5265 Web: www.magtronworld.com

RCMU101

at T_A= 25 °C, Vc = ±15V, unless otherwise noted

Accuracy–dynamic Performance Data			
V_{out}	Output voltage @ ±Ipn (Ipn=300mA)	| 2.001*Ip/Ipn | ①	V
V_{OE}	Electrical offset voltage	< 25	mV
ε_L	Linearity error	1	% of Ipn
X	Accuracy	2	% of Ipn
X_m	Accuracy at Tamb = 85 °C (max)	< 4	% of Ipn
BW	Frequency bandwidth (-3dB)	DC...700	Hz
T_{Vout}	Temperature drift of Vout @ Ip=0	< 300	ppm/K
I_C	Current consumption	< 26	mA
V_S	System working voltage (RMS)	< 750	V
dCp	Creepage distance	18.8	mm
dCl	Clearance distance	18.8	mm
CTI	Comparative Tracking Index (group I)	600	V

Electrical Data			
I_{PN}	Primary differential current	300	mA
I_O	Measurement range	0~±600	mA
I_M	Fault over current recovery limit	100	A
V_C	Supply voltage	±12 ~ ±15	V

General Data			
T_A	Ambient operating temperature	-40~+85	°C
T_S	Ambient storage temperature	-40~+105	°C
m	Mass	15	g
	Standards	EN 50178	IEC 60950-1
		UL 1741	VDE 0126-1-1

Note :

①:The output voltage of the sensor is positive voltage by rectifier circuit.

RCMU101B

at T_A= 25 °C, Vc = ±15V, unless otherwise noted

Accuracy–dynamic Performance Data			
V_{out}	Output voltage @ ±Ipn (Ipn=300mA)	2.001*Ip/Ipn	V
V_{OE}	Electrical offset voltage	< 25	mV
ε_L	Linearity error	1	% of Ipn
X	Accuracy	2	% of Ipn
X_m	Accuracy at Tamb = 85 °C (max)	< 4	% of Ipn
BW	Frequency bandwidth (-3dB)	DC...700	Hz
T_{Vout}	Temperature drift of Vout @ Ip=0	< 300	ppm/K
I_C	Current consumption	< 26	mA
V_S	System working voltage (RMS)	< 750	V
dCp	Creepage distance	18.8	mm
dCl	Clearance distance	18.8	mm
CTI	Comparative Tracking Index (group I)	600	V

Electrical Data			
I_{PN}	Primary differential current	300	mA
I_O	Measurement range	0~±600	mA
I_M	Fault over current recovery limit	100	A
V_C	Supply voltage	±12 ~ ±15	V

General Data			
T_A	Ambient operating temperature	-40~+85	°C
T_S	Ambient storage temperature	-40~+105	°C
m	Mass	15	g
	Standards	EN 50178	IEC 60950-1
		UL 1741	VDE 0126-1-1

RCMU101S

at T_A= 25 °C, Vc = +5V, unless otherwise noted

Accuracy–dynamic Performance Data			
V_{out}	Output voltage @ ±Ipn (Ipn=300mA)	2.5+1.2*Ip/Ipn	V
V_{OE}	Electrical offset voltage	< 25	mV
ε_L	Linearity error	1	% of Ipn
X	Accuracy	2	% of Ipn
X_m	Accuracy at Tamb = 85 °C (max)	< 4	% of Ipn
BW	Frequency bandwidth (-3dB)	DC...700	Hz
T_{Vout}	Temperature drift of Vout @ Ip=0	< 300	ppm/K
I_C	Current consumption	< 20	mA
V_S	System working voltage (RMS)	< 750	V
dCp	Creepage distance	18.8	mm
dCl	Clearance distance	18.8	mm
CTI	Comparative Tracking Index (group I)	600	V

Electrical Data			
I_{PN}	Primary differential current	300	mA
I_O	Measurement range	0~±500	mA
I_M	Fault over current recovery limit	80	A
V_C	Supply voltage(±1%)	+5	V

General Data			
T_A	Ambient operating temperature	-40~+85	°C
T_S	Ambient storage temperature	-40~+105	°C
m	Mass	15	g
	Standards	EN 50178	IEC 60950-1
		UL 1741	VDE 0126-1-1

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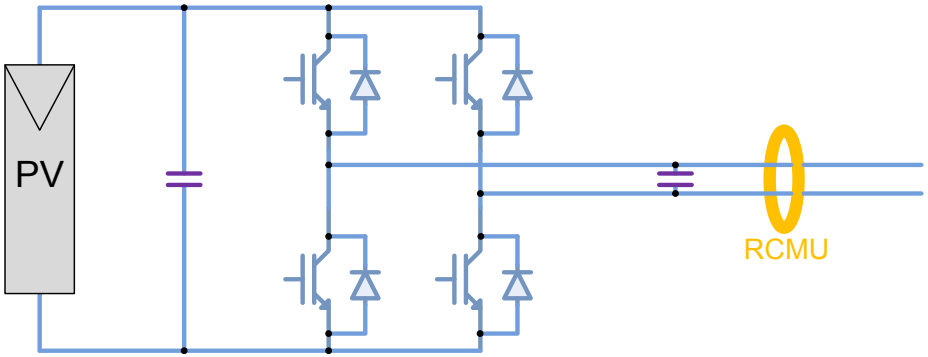
Application information

Self-check Function

Connect the CHK to voltage high (3.3V<= V_{CHK} <=+Vc). Detector runs in self-test mode, check the OUT (PIN1), when the output voltage is 275mV to 375mV (RCMU 101S output voltage is 2.5V+175mV to 2.5V+225mV), the detector is ok. Then connect the CHK to voltage low (V_{CHK} <=0.2V), the detector starts to monitor the residual current.

Photovoltaic Inverter Residual Current

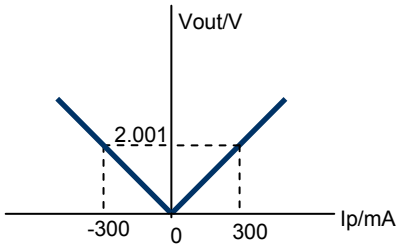


For no separation of power grid and the photovoltaic power generation between the inverter, according to VDE0126-1-1, there must be RCMU (residual current monitoring unit).

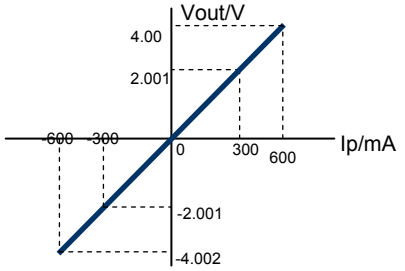
From VDE0126-1-1, inverters without a basic insulation (e.g. basic insulated transformer) between the grid and the photovoltaic-Generator must have a fault current monitoring unit (RCMU) installed. The d.c. and a.c. component of the fault current depend on the construction of the inverter and on the d.c. voltage of the PV-generator.

Output Voltage

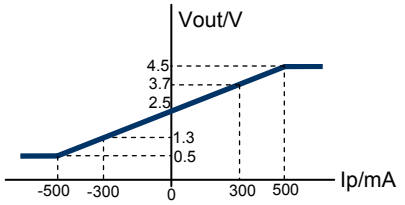
RCMU101

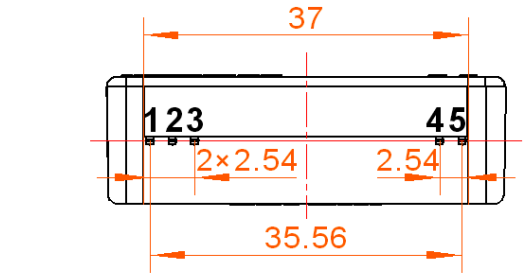


RCMU101B

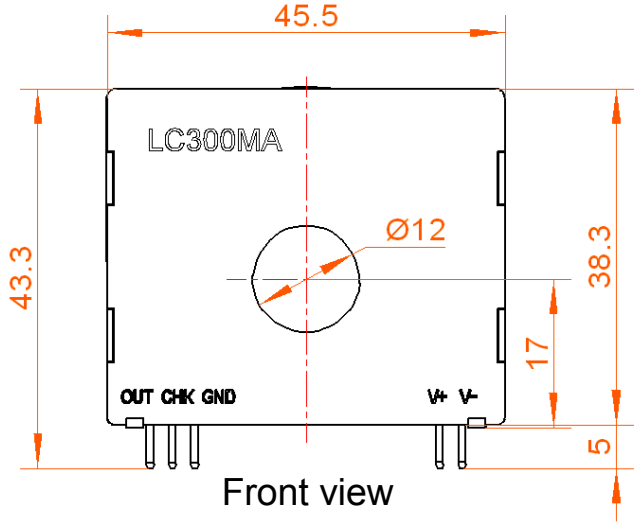


RCMU101S

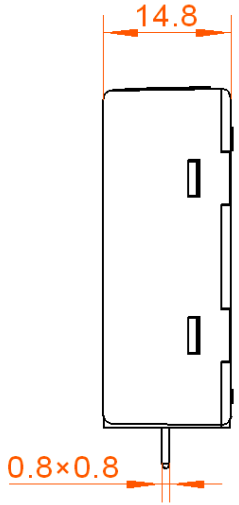




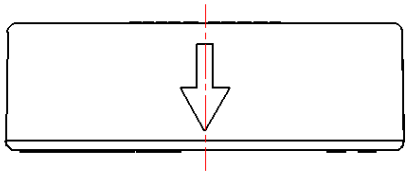
Bottom view



Front view



Right view



Top view

Dimensions in RCMU101 series

(In mm. general linear tolerance ±0.25mm)

Mechanical Characteristics

- Pin-out case length 4mm
- Primary 5 pins 0.8 x 0.8 mm (-0.1mm)
  Recommended PCB hole 1.2 mm
- Through-hole diameter : 12 mm

Pin Definition

1	OUT	Output Voltage
2	CHK	Product Self-check
3	GND	Power Ground
4	V+	Supply Voltage +12V ~ +15V
5	V-	Supply Voltage -12V ~ -15V
4①	V+	Supply Voltage +5V
5②	Vref	Reference Voltage

①②:**RCMU101S Pin Definition**