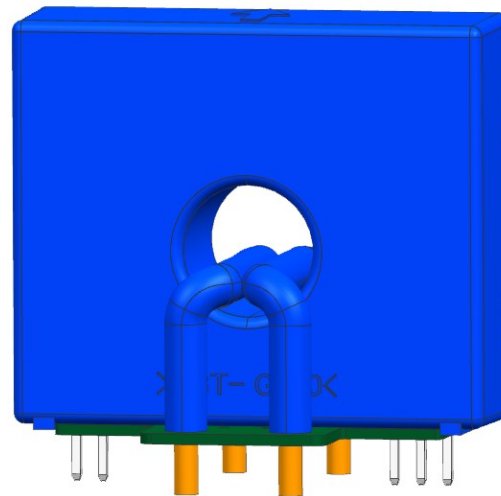


RCMU104 series

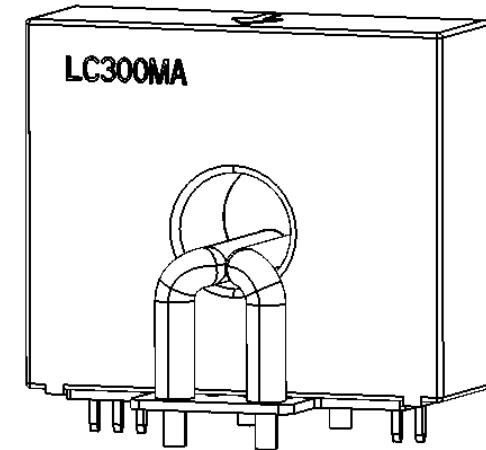
Residual Current Monitoring Unit



RCMU104 series

Residual Current Monitoring Unit with $\pm 12V \sim \pm 15V$ 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 $\pm 600\text{mA}$
- Self-check function
- Positive output for ADC
- Printed circuit board mounting
- Two through-hole conductors
- 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

RCMU104

at $T_A = 25\text{ }^\circ\text{C}$, $V_C = \pm 15\text{V}$, unless otherwise noted

Accuracy–dynamic Performance Data				Electrical Data			
V_{out}	Output voltage @ $\pm I_{pn}$ ($I_{pn}=300\text{mA}$)	$ 2.001 \cdot I_p / I_{pn} $ ^①	V	I_{PN}	Primary differential current	300	mA
V_{OE}	Electrical offset voltage	< 25	mV	I_O	Measurement range	0~ ± 600	mA
ϵ_L	Linearity error	1	% of I_{pn}	I_M	Fault over current recovery limit	100	A
X	Accuracy	2	% of I_{pn}	V_C	Supply voltage	$\pm 12 \sim \pm 15$	V
X_m	Accuracy at $T_{amb} = 85\text{ }^\circ\text{C}$ (max)	< 4	% of I_{pn}				
BW	Frequency bandwidth (-3dB)	DC...700	Hz	General Data			
T_{Vout}	Temperature drift of V_{out} @ $I_p=0$	< 300	ppm/K	T_A	Ambient operating temperature	-40~+85	$^\circ\text{C}$
I_C	Current consumption	< 26	mA	T_S	Ambient storage temperature	-40~+105	$^\circ\text{C}$
V_S	System working voltage (RMS)	< 750	V	m	Mass	36	g
dCp	Creepage distance	13.6	mm		Standards	EN 50178	IEC 60950-1
dCI	Clearance distance	13.6	mm			UL 1741	VDE 0126-1-1
CTI	Comparative Tracking Index (group I)	600	V				

Note :

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

RCMU104B

at $T_A = 25\text{ }^\circ\text{C}$, $V_C = \pm 15\text{V}$, unless otherwise noted

Accuracy–dynamic Performance Data				Electrical Data			
V_{out}	Output voltage @ $\pm I_{pn}$ ($I_{pn}=300\text{mA}$)	$2.001 \cdot I_p / I_{pn}$	V	I_{PN}	Primary differential current	300	mA
V_{OE}	Electrical offset voltage	< 25	mV	I_O	Measurement range	0~ ± 600	mA
ϵ_L	Linearity error	1	% of I_{pn}	I_M	Fault over current recovery limit	100	A
X	Accuracy	2	% of I_{pn}	V_C	Supply voltage	$\pm 12 \sim \pm 15$	V
X_m	Accuracy at $T_{amb} = 85\text{ }^\circ\text{C}$ (max)	< 4	% of I_{pn}				
BW	Frequency bandwidth (-3dB)	DC...700	Hz	General Data			
T_{Vout}	Temperature drift of V_{out} @ $I_p=0$	< 300	ppm/K	T_A	Ambient operating temperature	-40~+85	$^\circ\text{C}$
I_C	Current consumption	< 26	mA	T_S	Ambient storage temperature	-40~+105	$^\circ\text{C}$
V_S	System working voltage (RMS)	< 750	V	m	Mass	36	g
dCp	Creepage distance	13.6	mm		Standards	EN 50178	IEC 60950-1
dCI	Clearance distance	13.6	mm			UL 1741	VDE 0126-1-1
CTI	Comparative Tracking Index (group I)	600	V				

RCMU104S

at $T_A = 25\text{ }^\circ\text{C}$, $V_C = +5\text{V}$, unless otherwise noted

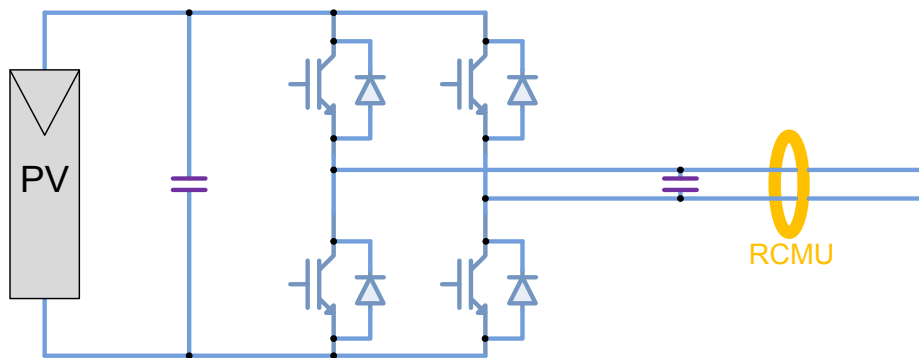
Accuracy–dynamic Performance Data				Electrical Data			
V_{out}	Output voltage @ $\pm I_{pn}$ ($I_{pn}=300\text{mA}$)	$2.5+1.2 \cdot I_p/I_{pn}$	V	I_{PN}	Primary differential current	300	mA
V_{OE}	Electrical offset voltage	< 25	mV	I_O	Measurement range	$0 \sim \pm 500$	mA
ϵ_L	Linearity error	1	% of I_{pn}	I_M	Fault over current recovery limit	80	A
X	Accuracy	2	% of I_{pn}	V_C	Supply voltage($\pm 1\%$)	+5	V
X_m	Accuracy at $T_{amb} = 85\text{ }^\circ\text{C}$ (max)	< 4	% of I_{pn}				
BW	Frequency bandwidth (-3dB)	DC...700	Hz	General Data			
T_{Vout}	Temperature drift of V_{out} @ $I_p=0$	< 300	ppm/K	T_A	Ambient operating temperature	-40~+85	$^\circ\text{C}$
I_C	Current consumption	< 20	mA	T_S	Ambient storage temperature	-40~+105	$^\circ\text{C}$
V_S	System working voltage (RMS)	< 750	V	m	Mass	36	g
dCp	Creepage distance	13.6	mm		Standards	EN 50178	IEC 60950-1
dCI	Clearance distance	13.6	mm			UL 1741	VDE 0126-1-1
CTI	Comparative Tracking Index (group I)	600	V				

Application information

Self-check Function

Connect the CHK to voltage high ($3.3V \leq V_{CHK} \leq +V_c$). Detector runs in self-test mode, check the OUT (PIN1), when the output voltage is 275mV to 375mV (RCMU 104S output voltage is $2.5V+175mV$ to $2.5V+225mV$), the detector is ok. Then connect the CHK to voltage low ($V_{CHK} \leq 0.2V$), the detector starts to monitor the residual current.

Photovoltaic Inverter Residual Current

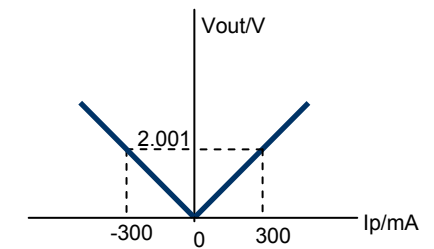


For no separation of power grid and the photovoltaic power generation between the inverter, according to VDE0126-1-1, there must be RCMU (residual current monitoring unit).

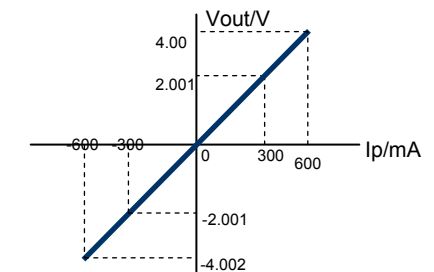
From VDE0126-1-1, inverters without a basic insulation (e.g. basic insulated transformer) between the grid and the photovoltaic-Generator must have a fault current monitoring unit (RCMU) installed. The d.c. and a.c. component of the fault current depend on the construction of the inverter and on the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

Output Voltage

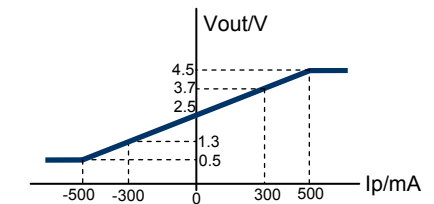
RCMU104

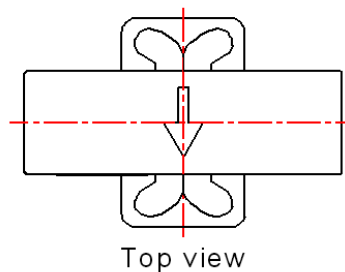
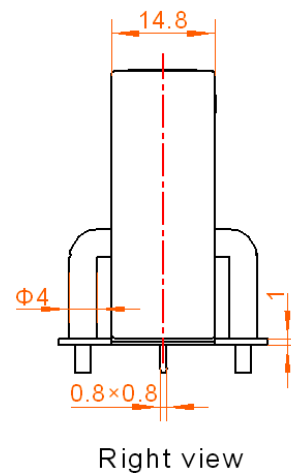
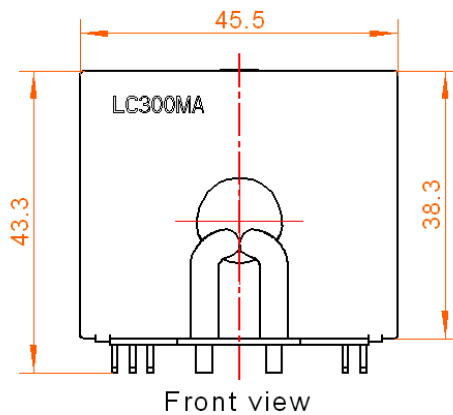
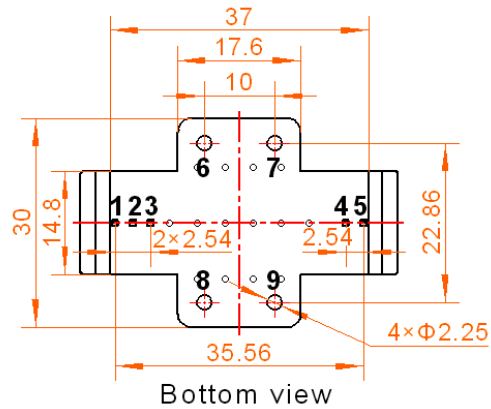


RCMU104B



RCMU104S





Dimensions in RCMU 104 series

(In mm. general linear tolerance $\pm 0.25\text{mm}$)

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
4 ^①	V+	Supply Voltage +5V
5 ^②	Vref	Reference Voltage

①②:RCMU 104S Pin Definition