Rogowski Current Sensor
RC01 / RC03 / RC05 / RC07 - Series



Overview

Rogowski Coil RC-Series for AC current measurement. Wide application ranges from PCB mounted up to medium voltage versions. Available as shielded and un-shielded types.

Benefits:

- Wide dynamic measurement range with excellent linearity, no saturation effects and no upper current limit
- Very low phase displacement compared to conventional current transformers
- Customizable output signal, coil geometries & dimensions, cable length and connector interfaces

Features:

- Meets IEC 61869-10 Accuracy Class 1
- Phase error <0.03 degree @ 50 Hz / 60 Hz
- Linear Bandwidth up to 370 kHz
- Low influence from external AC magnetic fields
- Immune to DC current
- Low temperature coefficient

Applications

- Circuit Breaker
- Motor Protection Switch
- Gas Insulated Switchgear
- Smart Grid Monitoring
- Load Balancing & Power Quality Management
- Power Supplies for AI Servers
- Transformer Condition Monitoring
- Substation Applications
- Overhead Line Infrastructure

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Electrical Specifications

@ 25°C - Operating Temperature -20°C to +80°C

Description	Part Number	Sensitivity mV/kA			typ. Influence of external magnetic field *1)	typ. Influence of external electric field *2)	typ. Resonance frequence	typ. Temperature coefficient	Cable length	Weight
		50 Hz	60 Hz	Toler-ance	%	mA (@230VAC / 50 Hz)	kHz	ppm / K	mm	g
RC01-SSS-O										
Rogowski Coil Size 01 – 100 mV/kA	RC01-100	100	120	±1%	0,2	60	370	30	n.A.	7
Rogowski Coil Size 01 – 100 mV/kA - Shielded	RC01-100-S					25				
Rogowski Coil Size 01 – 200 mV/kA	RC01-200	200	240	±1%	0,2	40	200	25	n.A.	7
Rogowski Coil Size 01 – 200 mV/kA - Shielded	RC01-200-S					25				
Rogowski Coil Size 01 – 300 mV/kA	RC01-300	300	360	±1%	0,2	35	150	25	n.A.	7
Rogowski Coil Size 01 – 300 mV/kA - Shielded	RC01-300-S					25				
RC03-SSS-LLLL-O										
Rogowski Coil Size 03 – 200 mV/kA	RC03-200-0250	200	240	±1%	0,2	125	170	25	250 ± 15	23
Rogowski Coil Size 03 – 200 mV/kA - Shielded	RC03-200-0250-S					50				
Rogowski Coil Size 03 – 400 mV/kA	RC03-400-0250	400	480	±1%	0,2	85	90	6	250 ± 15	24
Rogowski Coil Size 03 – 400 mV/kA - Shielded	RC03-400-0250-S					45				
Rogowski Coil Size 03 – 600 mV/kA	RC03-600-0250	600	720	±1%	0,2	80	70	3	250 ± 15	25
Rogowski Coil Size 03 – 600 mV/kA - Shielded	RC03-600-0250-S					45				
RC05-SSS-LLLL-O										
Rogowski Coil Size 05 – 150 mV/kA	RC05-150-1000	150	180	±1%	0,2	140	110	28	1000 ± 50	65
Rogowski Coil Size 05 – 150 mV/kA - Shielded	RC05-150-1000-S					20				
Rogowski Coil Size 05 – 300 mV/kA	RC05-300-1000	300	360	±1%	0,2	110	60	25	1000 ± 50	67
Rogowski Coil Size 05 – 300 mV/kA - Shielded	RC05-300-1000-S					40				
Rogowski Coil Size 05 – 450 mV/kA	RC05-450-1000	450	540	±1%	0,2	80	45	21	1000 ± 50	69
Rogowski Coil Size 05 – 450 mV/kA - Shielded	RC05-450-1000-S					20				
RC07-SSS-LLLL-O										
Rogowski Coil Size 07 – 200 mV/kA	RC07-200-1800	200	240	±1%	0,33	700	250 220	50 25	1800 ± 50	182
Rogowski Coil Size 07 – 200 mV/kA - Shielded	RC07-200-1800-S					20				

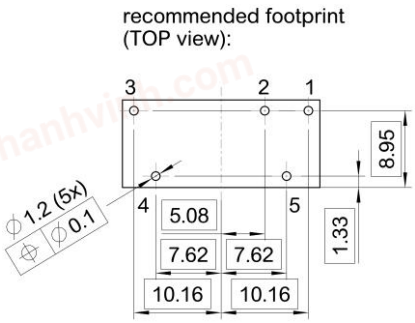
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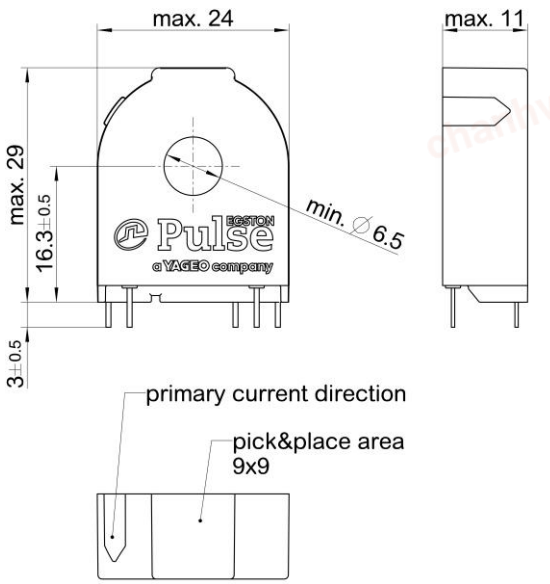
Mechanicals

RC01-SSS-O

Dimensions in mm

polarity +: Pin 1
polarity -: Pin 2
shielding: Pin 3

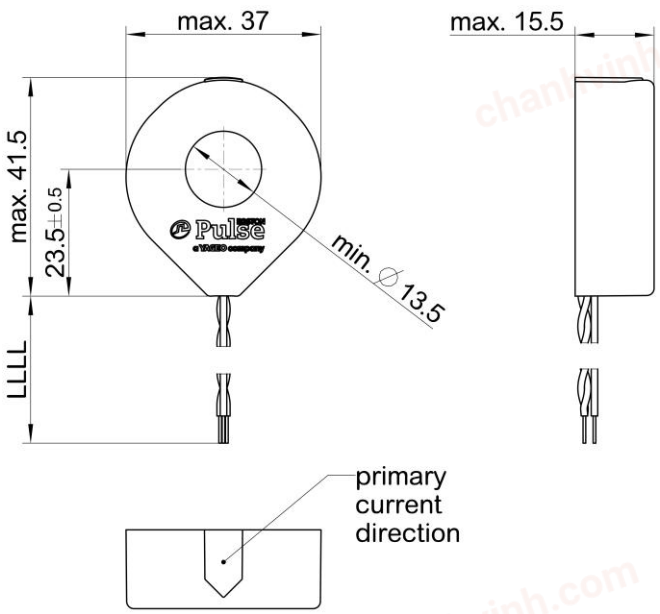




RC03-SSS-LLLL-O

Dimensions in mm

polarity +: yellow
polarity -: green
shielding: blue



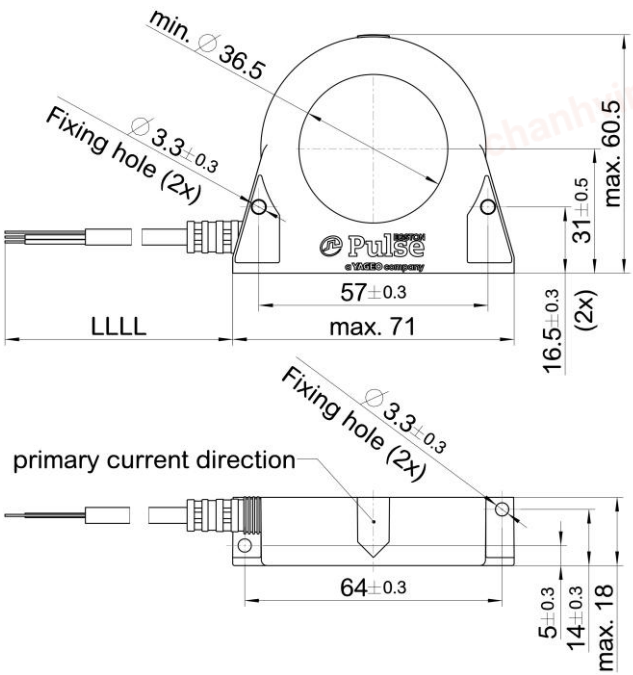
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Mechanicals

RC05-SSS-LLLL-O

Dimensions in mm

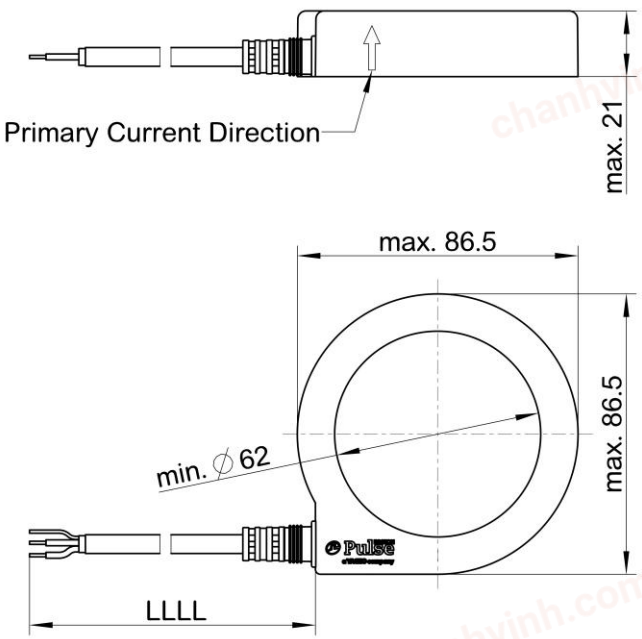
polarity +: red
polarity -: black
shielding: blank



RC07-SSS-LLLL-O

Dimensions in mm

polarity +: red
polarity -: black
shielding: blank



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Influence

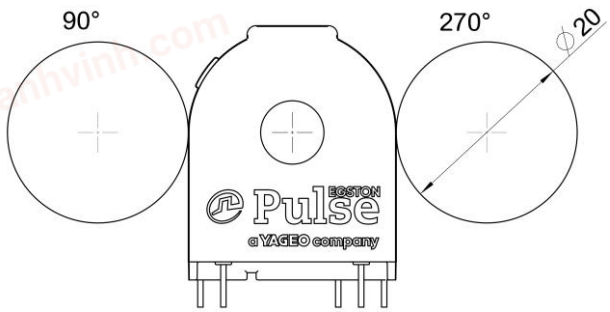
*1) of external magnetic field:

An external current conductor with specified diameter is close applied to the housing outline.

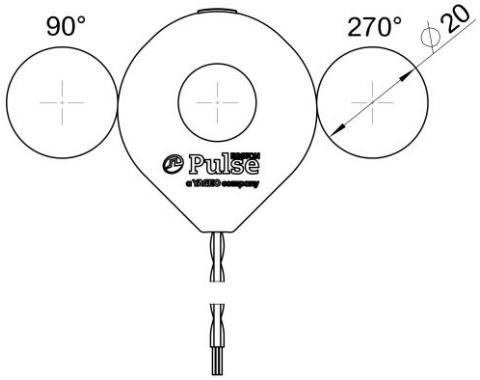
Tests will be done at the positions:
1) 90°
2) 270°

Test setup:

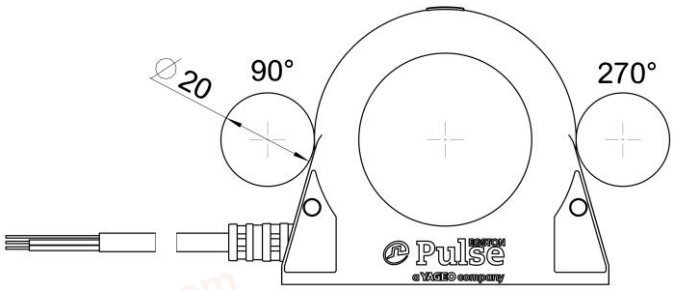
RC01:



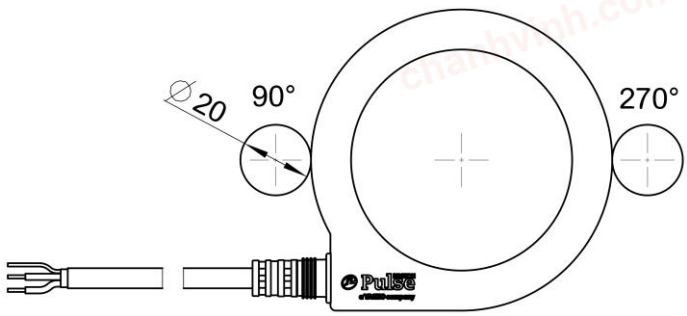
RC03:



RC05:



RC07:



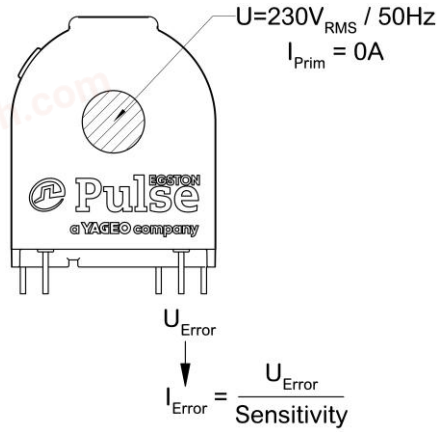
Influence

*2) of external electric field:

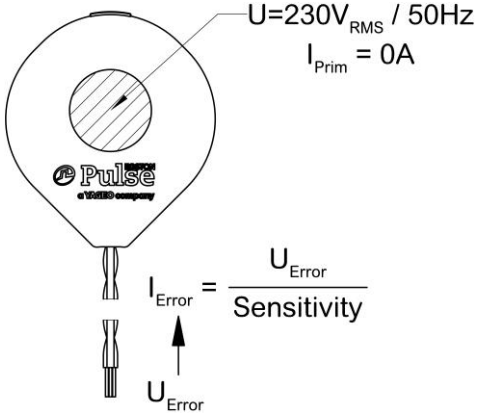
A conductor is passed through the Rogowski coil, completely filling the coil. This conductor is supplied with a voltage of 230 V_{RMS} / 50 Hz, with no primary current, against earth. The capacitive coupling between the conductor and the Rogowski coil generates a voltage on the Rogowski coil. This voltage is converted into a current using the sensitivity of the Rogowski coil. This indicates the fault current induced by a voltage applied to the primary conductor at 230 V_{RMS} / 50 Hz.

Test setup:

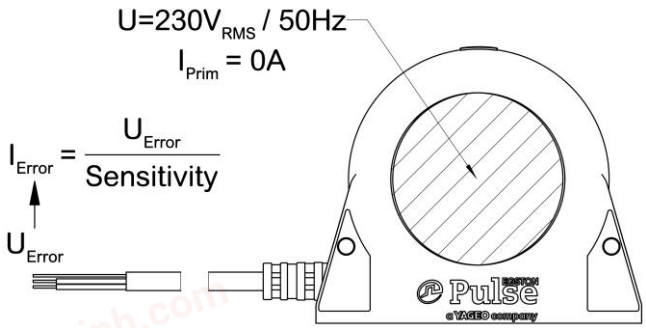
RC01:



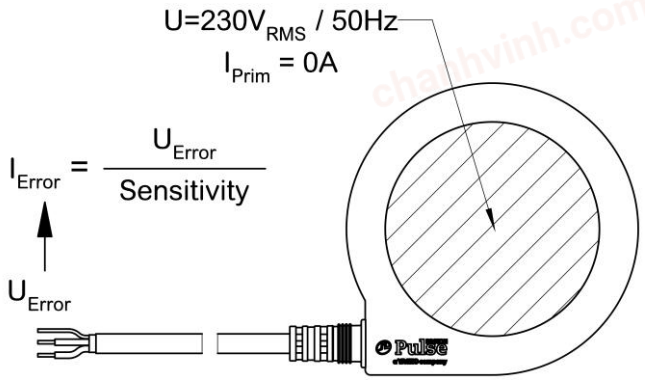
RC03:



RC05:



RC07:

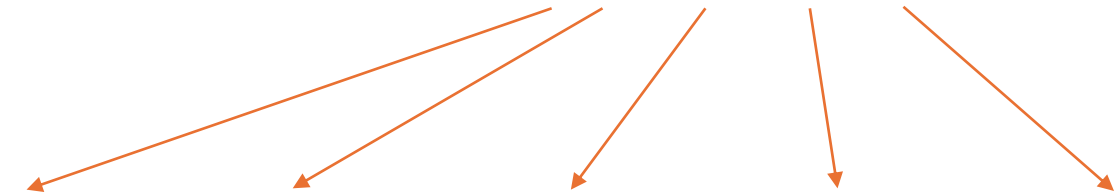


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Legend

Codification

RCXX – SSS – LLLL - O



RC:	XX:	SSS:	LLLL:	O: (Options)
Rogowski Coil	01: Size 01 03: Size 03 05: Size 05 07: Size 07	Sensitivity in mV/kA/50Hz	optional wire length in mm	S: with shielding

Customizable on request:

- output signal
- core shapes (e.g. oblong)
- lead wire length
- connectors
- certifications according to specific standards
- for RC05 & RC07: IP and outdoor rating

Also in our production scope:

- Combined current transformers (CCT), containing Rogowski coil and Energy harvester
- Integrator circuit for processing the signal of Rogowski coils
- Flexible Rogowski coils

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