ROG4X

Rogowski coil for EM530 RG, EM50 and EM210

Benefits

- **Adaptability and flexibility.** Effective for a wide range of currents and available in three different lengths, it can be installed in existent applications and/or with reduced space, on single cables, on cable bundles or high capacity busbars.
- **Accuracy.** The lack of a ferromagnetic core improves measurement accuracy in a wide range of currents and eliminates possible interferences.
- **Simplified system.** The current calculation integrator is included in EM530 RG, EM210 or EM50 analyzer, thus neither additional wiring nor space are required; the sensor is directly connected to the analyzer.
- **Fast installation.** The opening/closing mechanism makes installation fast even in existent applications. The analyzer only requires two cables to be connected per sensor and the installation is made easy by the color (black, orange, blue) on the connection cable

Description

Current sensor based on the Rogowski principle, to be used in combination with EM530 RG, EM210 (versions EM210 72D MV5 and EM210 72D MV6) or with the EM50 (RG5 version) to measure current in single-phase (EM210 and EM50), two-phase and three-phase systems (all mentioned products). Compact, flexible and lightweight, it is suited to all applications and can be installed in all types of switchboards.
Supplied in a kit made up of three different coloured pieces to make phase identification easy, it comes with coils with three different diameters and lengths and measures a wide current interval:from 1.2 A to 2400 A with EM530 RG, from 20 to 1000 A with EM50 and up to 4000 A with EM210.

Operating principle

The Rogowski sensor is an alternating current measurement device.

Unlike current sensors with ferromagnetic core, the linearity of the Rogowski sensor makes it specifically indicated to measure high currents.

Its operating principle is very simple: a voltage signal dependent on the primary current trend, which can be reconstructed using an integration process, is generated at the ends of the coil positioned around a conductor.

Unlike traditional Rogowski sensors, ROG4X does not require an external integrator with additional power supply since measurement is entirely controlled by the analyzer.

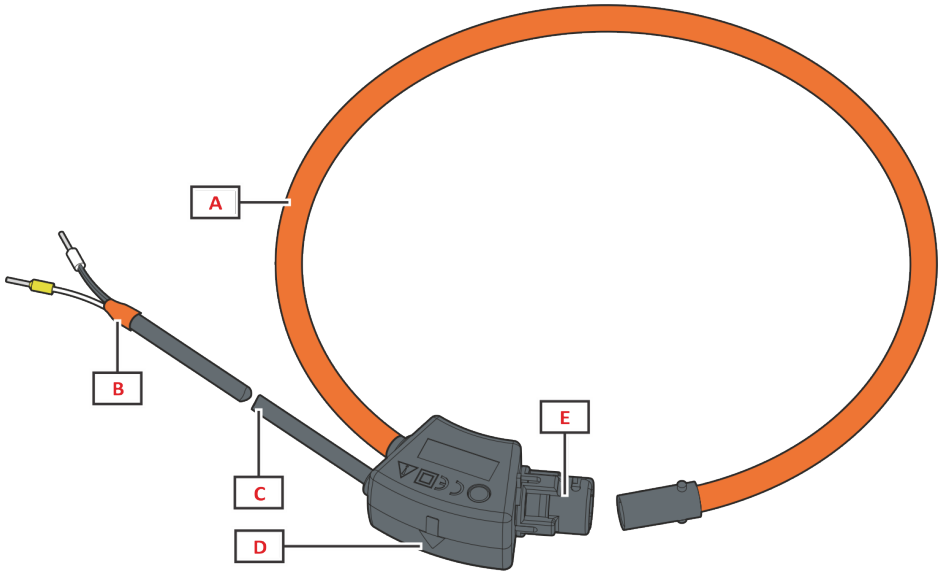
Applications

Indicated for retail and industrial solutions, especially for retrofitting and/or contexts with reduced available space where installing a current sensor with ferromagnetic core is difficult.

It is especially indicated to measure:

- industrial or building system load
- single machine load with high current absorption

Structure



Area	Description
A	Coil
B	Colored sensor identification
C	Analyzer connection cable
D	Arrow for current flow direction
E	Coil opening/closing mechanism

Features

General

Material	Thermoplastic rubber, self-extinguishing degree V-0 (UL 94)
Protection degree	IP67
Connection cable to analyzer	Wires: section 0.34 mm^2 (2x22 AWG + shield) Length: 2 m
Overvoltage category	Cat. III 1000 V Cat. IV 600 V
Pollution degree	2
Mounting	Cable Busbar

Dimensions and weight				
Code key	Coil length (mm)	Coil thickness (mm)	External coil diameter (mm)	Weight (g)
ROG4X1002M2503X	250	8.3 +/- 0.2	90	130
ROG4X1002M3503X	350	8.3 +/- 0.2	120	140
ROG4X1002M6003X	600	8.3 +/- 0.2	200	170
ROG4X1002M9003X	900	8.3 +/- 0.2	290	200

Environmental specifications

Operating temperature	From -30 to + 80 °C / from -22 to 176 °F
Storage temperature	From -40 to + 80 °C / from -40 to 176 °F
Maximum altitude	2000 m / 6562 ft

Conformity

Directives	2014/35/EU (LVT - Low Voltage)
Standards	EN61010-1, EN61010-031, EN61010-2-031, EN61010-2-032
Approvals	CE c UL us UKCA

Electrical specifications

Primary current	from 1.2 to 2400 A (with EM530 RG) from 20 to 4000 A (with EM210) from 20 to 1000 A (with EM50)
Output signal	100 mV / 1 kA @50 Hz
Operating frequency	From 40 to 20000 kHz
Accuracy	+/- 1%
Position sensitivity	+/- 1% with respect to the central point
External field influence	+/- 0.5% in the range -30°C to +70°C
Internal resistance	From 70 to 900 Ω
Dielectric strength	7.4 kV ac for 1 minute (connection cable wires and coil)

Connection Diagrams

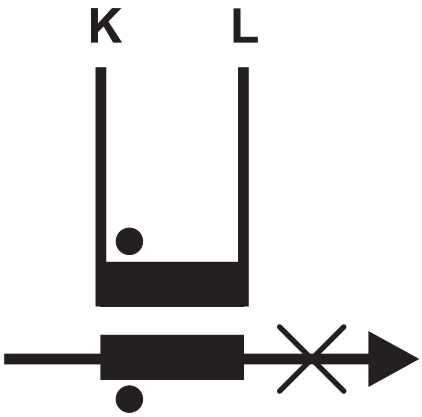


Fig. 1 *Current connection*

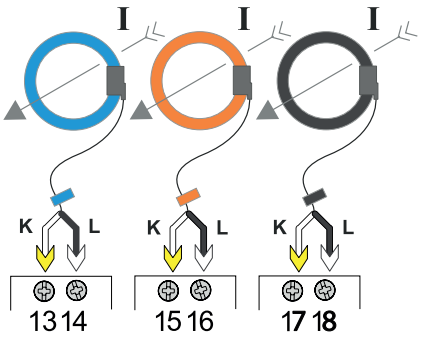


Fig. 2 *Connection with EM530 RG, K=white (yellow ferrule), L=black (white ferrule)*

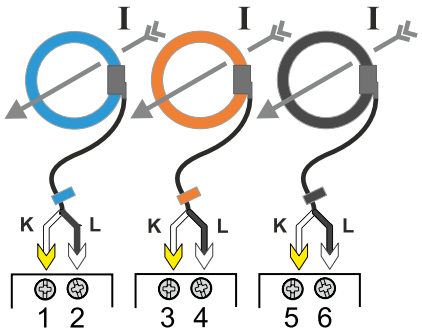


Fig. 3 *Connection with EM210,K=white (yellow ferrule), L=black (white ferrule)*

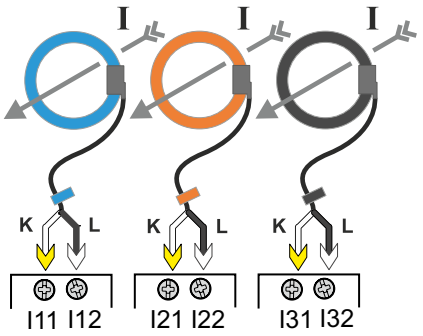


Fig. 4 *Connection with EM50, K=white (yellow ferrule), L=black (white ferrule)*

References

Kit with 3 coils inside, one orange, one blue and one grey

ROG4X 100 2M ☐ 3X

Enter the code option instead of ☐

Code	Options	Description
ROG4X	-	Model
100	-	Output signal
2M	-	Length of the connection cable
☐	250	250 mm coil
	350	350 mm coil
	600	600 mm coil
	900	900 mm coil
3X	-	Amount of coils in the box: one orange, one blue and one grey

Spare parts (available upon request and subject to minimum order quantities)

ROG4X 100 2M ☐☐

Enter the code option instead of ☐

Code	Options	Description
ROG4X	-	Model
100	-	Output signal
2M	-	Length of the connection cable
☐	250	250 mm coil
	350	350 mm coil
	600	600 mm coil
	900	900 mm coil
☐	OG	Orange coil
	BU	Blue coil
	GY	Grey coil

***Note**: different cable lengths available upon request (subject to minimum order quantities).*

Further reading

Document	Where to find it
Instruction manual - ROG4X	https://www.gavazziautomation.com/images/PIM/MANUALS/ENG/ROG4X_IM.pdf
EM530 RG Datasheet	https://www.gavazziautomation.com/fileadmin/images/PIM/DATASHEET/ENG/EM530_DS_ENG.pdf
EM530 RG Installation	https://www.gavazziautomation.com/fileadmin/images/PIM/MANUALS/ENG/EM530_RG_IM_INST.pdf
EM210 Datasheet	https://www.gavazziautomation.com/images/PIM/DATASHEET/ENG/EM210_DS_ENG.pdf
EM210 installation	https://www.gavazziautomation.com/images/PIM/MANUALS/ENG/EM210_IM.pdf
EM50 Datasheet	http://www.gavazziautomation.com/images/PIM/DATASHEET/ENG/EM50_DS_ENG_2021_05_24.pdf
EM50 installation	http://www.gavazziautomation.com/images/PIM/MANUALS/ENG/8022039 EM50_IM_INST_EN_FR_ES_060520.pdf

CARLO GAVAZZI compatible components

Purpose	Component code key	Notes
Measure and view connected load consumption (415 V L-L ca)	EM530DINRG53XS1X	RS485 Modbus RTU port, see relevant datasheet
Measure and view connected load consumption (230 V L-N, 400 V L-L ca)	EM21072DMV53XOXX	1 pulse output, see relevant datasheet
	EM21072DMV53XOSX	1 pulse output, 1 RS485 port, see relevant datasheet
Measure and view connected load consumption (120 V L-N, 230 V L-L ca)	EM21072DMV63XOXX	1 pulse output, see relevant datasheet
	EM21072DMV63XOSX	1 pulse output, 1 RS485 port, see relevant datasheet
Measure and view connected load consumption (up to 347 V L-N, up to 600 V L-L)	EM50DINRG53HRSX	1 pulse output, 1 relay output, 1 RS485 port, see relevant datasheet