algodue MFC150-UI Rogowski Coil Current Sensor User Manual

Contents

algodue ELETTRONICA
Innovative Electronic Systems

algodue MFC150-UI Rogowski Coil Current Sensor

Specifications

- **Model**: MFC150-UI
- **Usage**: Indoor/Outdoor
- **Compliance**: IEC 61010-1, IEC 61010-2-032, UL 2808 standards
- **Power Supply**: 4-26 VDC

Product Usage Instructions

Introduction
The Rogowski coil is designed for use by qualified technicians in accordance with safety standards for electrical installations. Only individuals with appropriate training and Personal Protective Equipment should handle the coil.

Safety Instructions
Install the Rogowski coil in an environment that meets its operational conditions. Connection and installation should only be done by qualified technicians. Ensure bare conductor wires are not powered and there are no neighboring powered conductors before installation.

Mounting
Proper installation is crucial for accurate measurements. Ensure the coil is not tightly fit around the conductor to prevent interference from adjacent sources. To install, fit the coil around the conductor and lock it by turning the ring as shown in picture A.

Connections
For models with an integrator, follow the connection diagram provided. The coil is polarity protected. Connect the wires as follows:

- WHITE wire – OUT+
- BLACK wire – OUT-
- RED wire – Positive power (4-26 VDC)
- BLUE wire – Negative power (GND)

- SHIELD – Connect to GND

INTRODUCTION

The manual is intended only for qualified, professional and skilled technicians, authorised to act in accordance with the safety standards provided for the electrical installations. This person must have appropriate training and wear suitable Personal Protective Equipment.

WARNING! It is strictly forbidden for anyone who does not have the above-mentioned requires to install or use the coil.

It is forbidden to use the coil for purposes other than intended ones, specified in this manual. The symbols on the product are following described:

-  Attention! Refer to the user manual.
-  Protected throughout by DOUBLE INSULATION or REINFORCED INSULATION.
-  Do not apply around or remove from HAZARDOUS LIVE conductors without additional protective means.
-  Complies with the relevant European standards.
-  Underwriters' Laboratory Inc. recognized component.

AVAILABLE MODELS

MODEL	Built-in INTEGRATOR	INDOOR use	OUTDOOR use
MFC150-UI		●	
MFC150-UI/O			●
MFC150-UI/F	●	●	
MFC150-UI/OF	●		●

SAFETY INSTRUCTIONS

The Rogowski coil must be installed in an environment which are according to the max operation conditions of the coil itself. WARNING! The connection and installation of the Rogowski coil must be carried out only by qualified technicians aware of the risks involved to the presence of voltage and current. Before carrying out an operation, check if:

1. bare conductor wires are not powered,
2. there are no neighbour bare conductors not powered

NOTE: The Rogowski coil complies with UL 61010-1 and UL 61010- 2-032 standards and following amendments. The installation must be carried out in accordance with the standards in force, the instructions of this user manual and the coil insulation value in order to avoid any danger for people. The Rogowski coil is a sensor for accurate measurement so it must be handled with care. Before use, read the following instructions carefully.

- Do not use the product if damaged.
- Always wear protective clothing and gloves when required.
- Avoid to strongly twist, blow and to perform pulling load on the product: the measurement accuracy may be impaired.
- Do not paint the product.
- Do not put metallic labels or other objects on the product: the insulation may be impaired.
- It is forbidden any use of the product different from the manufacturer specifications.

MOUNTING

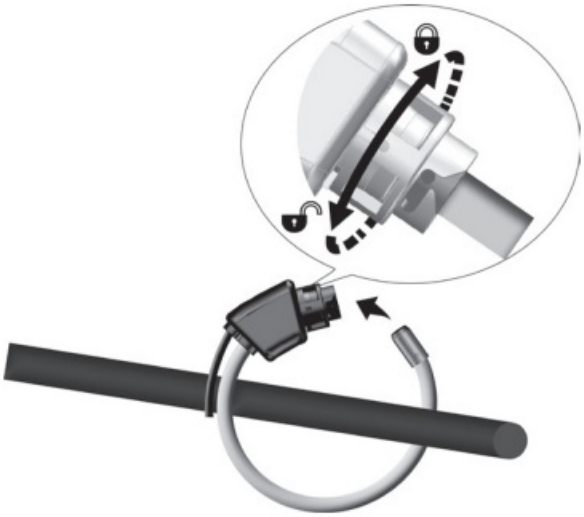
WARNING! Before installing the coil round a conductor not insulated, check that it is not powered otherwise switch the circuit OFF.

WARNING! Check if the coil is properly installed: a bad locking can affect measurement accuracy and the coil will become sensitive to adjacent conductors or other sources of electromagnetic fields.

NOTE: Coil must not fit tightly round the conductor, therefore its internal diameter must exceed that of the conductor. internal diameter must exceed that of the conductor. To carry out the installation, proceed as follow:

1. Fit the coil round the conductor, bringing the coil ends together.
2. Lock the coil by turning the ring as indicated in **picture A.**

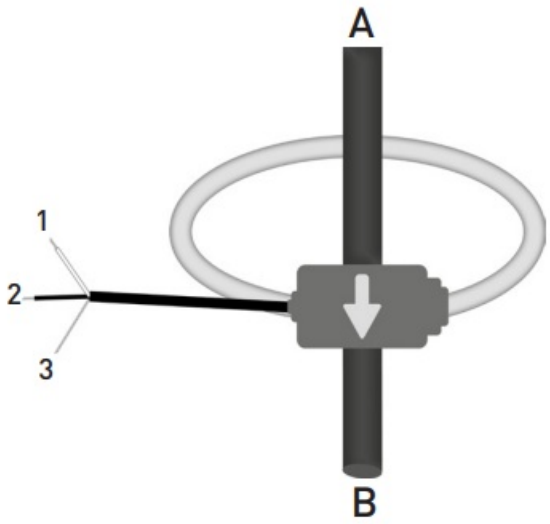
A



CONNECTIONS

The coil has an arrow indicating the load side. In case of model WITHOUT integrator refer to **picture B:**

B



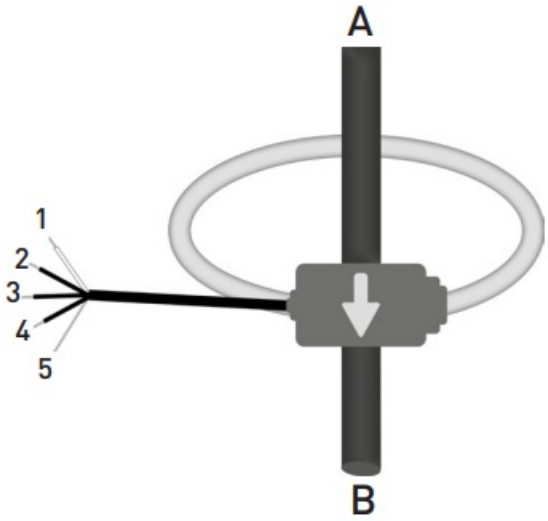
A = SOURCE
B = LOAD

1. WHITE wire, OUT+
2. BLUE wire, OUT3. SHIELD, connect to GND or OUT

   If the cable is provided with crimp pins:
   - YELLOW crimp pin, OUT+
   - WHITE crimp pin, OUT

In case of model WITH integrator refer to **picture C:**

C



A = SOURCE
B = LOAD

1. WHITE wire, OUT+
2. BLACK wire, OUT
3. RED wire, positive power, 4…26 VDC
4. BLUE wire, negative power, GND
5. SHIELD, connect to GND

The coil is protected against reverse polarity of the power supply

MAINTENANCE

Refer to the following instructions carefully for the product maintenance.

- Keep the product clean and free of surface contamination.
- Clean the product with a soft cloth damp with a water and neutral soap. Avoid to use corrosive chemical products, solvents or aggressive detergents.
- Make sure the product is dry before further use.
- Do not use or leave the product in particularly dirty or dusty environments.

TECHNICAL FEATURES

NOTE: For any doubt on the installation procedure or on product application, please contact our technical services or our local distributor.

COIL	
Coil length	300 … 3000 mm (1 1.8 118.1 in)
Sensor internal diameter	70 … 940 mm (2.7 … 37 in)
Coil diameter	8.3 ±0.2 mm (0.33 ±0.007 in)
Jacket material	Polyphenylene and thermoplastic elastomer
Fastening	Bayonet holder
Weight	150 … 500 g (5.3 17.6 oz)
ELECTRICAL CHARACTERISTICS FOR MODEL WITHOUT INTEGRATOR	
Nominal output rate	120 mV / kA @ 60 Hz (RMS values) 100 mV / kA @ 50 Hz (RMS values) Refer to the value i ndicated on the pro duct label
Max measurable current	2 kA with 300 … 42 0 mm (11.8 16.5 i n) coil length 5 kA with 430 … 30 00 mm (16.9 118. 1 in) coil length
Coil resistance	70 … 900 Ω

Accuracy	Class 1-A1 according to IEC 61 869-10
Frequency	50/60 Hz
Maximum primary voltage	600 V CAT IV, Servi ce Entrance
Pollution degree	2, Controlled Enviro nment for indoor us e model 3, Uncontrolled Env ironment for outdoo r use model
Insulation test voltage	7400 VRMS / 5 s
ELECTRICAL CHARACTERISTICS FOR MODEL WITH INTEGRATOR	
Power voltage	4 … 26 VDC
Max consumption	5 mADC
Nominal output rate	333 mV / FS (RMS values) FS changes accordi ng to the model: 1, 2, 5 kA Refer to the value indicated on t he product label
Positioning error	Better than ±1% of r eading
Frequency	50/60 Hz
Maximum primary voltage	600 V CAT IV, Servi ce Entrance
Pollution degree	2, Controlled Enviro nment for indoor us e model 3, Uncontrolled Env ironment for outdoo r use model
Insulation test voltage	7400 VRMS / 5 s
CONNECTION CABLE FOR MODEL WITHOUT INTEGRATOR	
Type	3 x 24 AWG shielde d
Length	3 m (9.8 ft). Other l engths on request: 5, 7, 10, 15 m (16.4, 23.0, 32.8, 49.2 ft)
CONNECTION CABLE FOR MODEL WITH INTEGRATOR	

Type	5 x 24 AWG shielde d
Length	3 m (9.8 ft). Other l engths on request: 5, 7, 10, 15 m
Length	(16.4, 23.0, 32. 8, 49.2 ft)
ENVIRONMENTAL CONDITIONS	
Protection degree	IP65 for indoor use model IP68 for outd oor use model
Altitude	Up to 2000 m over sea-level
Operating temperature	-35 … +75°C (-31 … +167°F) up to 2 kA -35 … +60°C (-31 … +140°F) from 2 t o 5 kA
Storage temperature	-40 … +90°C (-40 … +194°F)
Relative humidity	0 … 95%
Installation and use	Controlled Environ ment for indoor use model Uncontrolled Environment for out door use model
STANDARD COMPLIANCE	
IEC, UL standards	ANSI/CAN/UL 2808 , CSA C22.2 NO. 6 1010-1-12, IEC 61010-2-032, I EC 61010-1 Ed3, IE C 60529

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FAQ's

Q: Who should install the Rogowski coil?
A: Only qualified technicians authorized to work on electrical installations should install the coil.

Q: What standards does the Rogowski coil comply with?
A: The coil complies with IEC 61010-1, IEC 61010-2-032, UL 2808 standards, and relevant European standards.

Q: How should the coil be mounted?
A: The coil should be loosely fitted around the conductor to avoid interference. Follow the installation steps

provided in the manual.

Documents / Resources

	algodue MFC150-UI Rogowski Coil Current Sensor [pdf] User Manual MFC150-UI, MFC150-UI-O, MFC150-UI-F, MFC150-UI-OF, MFC150-UI Rogowski Coil Current Sensor, Rogowski Coil Current Sensor, Coil Current Sensor, Current Sensor, Sensor

References

- User Manual