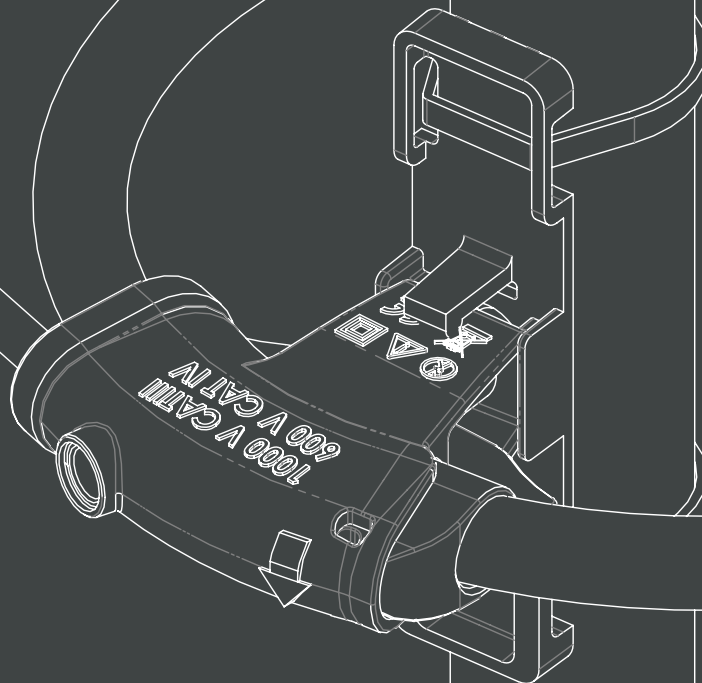


# Smart sensing for energy monitoring

## Rogowski Coils

sensors  
smilics



# Table of contents

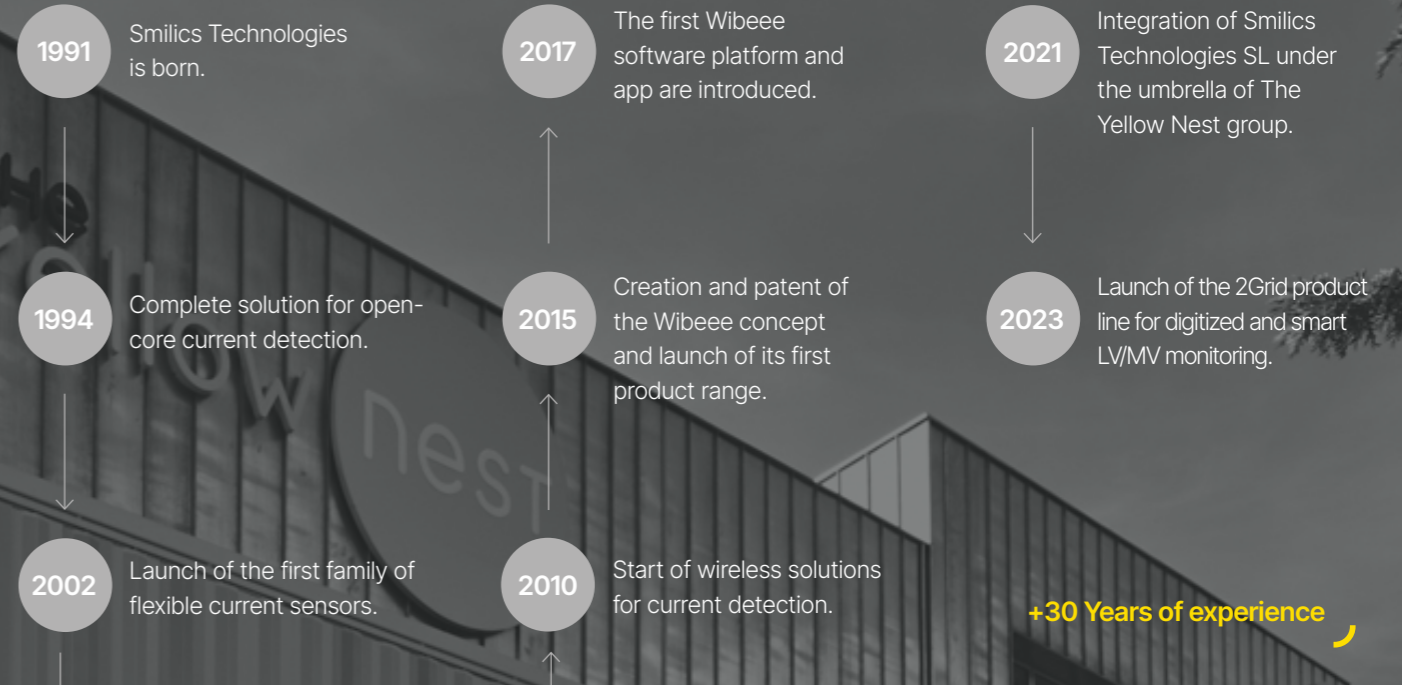
|    |                               |                                   |    |
|----|-------------------------------|-----------------------------------|----|
| 01 | Smilics Technologies          |                                   |    |
|    |                               | 01.1 / About Smilics Technologies | 4  |
| 02 | Rogowski Coil                 |                                   |    |
|    |                               | 02.1 / Why Choose Rogowski Coils? | 6  |
| 03 | Smilics Rogowski Coil Sensors |                                   |    |
|    |                               | 03.1 / Smilics Rogowski Coils     | 8  |
|    |                               | 03.2 / Magnetic Flex              | 12 |
|    |                               | 03.3 / Positioning Accessory      | 13 |
|    |                               | 03.4 / Magnetic Flex Kit          | 14 |
|    |                               | 03.5 / C Flex                     | 16 |
|    |                               | 03.6 / AM Flex                    | 18 |
|    |                               | 03.7 / DIN Flex                   | 20 |
|    |                               | 03.8 / Standard References        | 22 |

# About Smilics Technologies

Smilics Technologies, part of the global Yellow Nest group, specializes in advanced measurement and monitoring solutions for low- and medium-voltage secondary substations, supporting DSOs and utilities in more than 80 countries.

With over 30 years' of experience, we design and manufacture high-performance hardware and software that enable precise control, fault detection, and optimization of electrical distribution networks.

Based in Terrassa (Barcelona), our in-house R&D and manufacturing teams ensure the highest quality and reliability, accelerating the digitalization of the electrical grid through robust, field-ready solutions.



+30 Years of experience

**+600K**

devices installed worldwide

**+150K**







substations monitored

**+95%**

of our solutions are manufactured in Europe



Our portfolio includes advanced hardware and software solutions designed to make energy digitalization simple, smart, and accessible.

|                 |   |   |
|-----------------|---|---|
| Software        |  Wibeee Nest   |  Ready2Grid                              |
| Meters          |  Solutions for monitoring management of industrial, tertiary and domestic facilities |  Solutions for monitoring LV substations |
| Current Sensors |  Split Core Current Transformers   |  Rogowski Coils                          |

# Why Choose Rogowski Coils?

A Rogowski Coil is a flexible current sensor used to detect and measure electric currents. It consists of a coil with a non-ferromagnetic core placed around the conductor to be measured without requiring direct electrical contact.

When current flows through the conductor, it generates a magnetic field that induces a voltage in the Rogowski coil. This voltage is proportional to the rate of change of the current passing through the conductor. The induced voltage must be electronically integrated to obtain a signal proportional to the actual current value.

## Advantages of Rogowski Coils



### Flexible and lightweight design

Easily installed around cables or busbars; fits any setup without modification or extra space.



### Quick and non-intrusive installation

Connect quickly and safely without circuit interruption.



### Immunity to saturation

The non-ferromagnetic core guarantees accurate and reliable readings, even under high currents.



### Excellent linearity with a broad frequency response

Delivers precise measurements across a wide current range ideal for power monitoring, fault detection, and transient analysis.



### High measurement accuracy

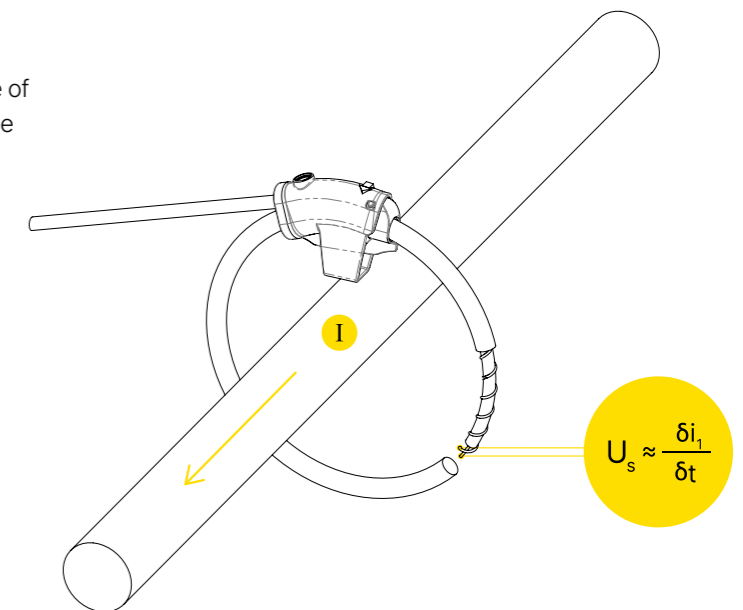
Provides precise current measurement with 0.5% accuracy.



### Application versatility

A single Rogowski Coil sensor can cover multiple current ranges, removing the need for specific transformation ratios.

In addition, Rogowski coils minimize the influence of the conductor's position inside the coil and reduce interference from nearby magnetic fields.







# Smilics Rogowski Coils

At Smilics Technologies, we manufacture a family of Rogowski Coils to suit different applications. Engineered to meet the most demanding applications, our coils offer exceptional adaptability for integration across all types of installations and equipment, both new and existing. They provide a versatile solution for accurate current measurement in industrial, commercial, and residential environments.

Fully developed and manufactured in Europe, with certified quality.



sensors  
smilics

|  |   |
|--|---|
|  <p><b>Magnetic Flex</b><br/>mV output</p> |  <p><b>AM Flex</b><br/>V f.s. output</p> |
|  <p><b>C Flex</b><br/>mV output</p>       |  <p><b>DIN Flex</b><br/>/1A output</p>  |

Smilics Rogowski sensors can be customized to match different application needs and OEM requirements.

## General Features:



### Install in seconds

Flexible design allows tool-free setup with no cable disconnection required.



### Wide current range

Measures from a few amperes to several kiloamperes with excellent linearity.



### No infrastructure changes

Compact and non-intrusive form, fits any setup without modifications or extra space.



### Built for demanding environments

IP67 rated with electrostatic shielding for better noise rejection and stable measurements.

## Energy digitalization



### Accurate and reliable

Air-core design avoids saturation and ensures precise readings with 0.5% accuracy, even under harmonics and variable loads.



### Integration made easy

Fully customizable to your needs: output, length, aperture, connectors, ideal for OEM designs.

# Smilics Rogowski Coils

## Reliable Measurement made simple

Magnetic Flex and C Flex deliver an mV output directly proportional to the measured current, requiring no external power supply for operation or signal generation. This makes them ideal for measuring and monitoring applications.





AM Flex and DIN Flex incorporate internal electronics for signal integration and conversion. They provide a ready-to-use standard output compatible with any measuring device.

# Magnetic Flex

Patented design featuring IP67 protection and positioning accessory for maximum accuracy.

Our most advanced solution, designed for precise current measurement in various electrical applications. Its flexible, lightweight design and magnetic closure allow for fast, tool-free installation without disconnecting cables or interrupting the power supply in confined spaces and complex installations.

→ Key Features:

-  Available in  $\varnothing 70$ ,  $\varnothing 120$  and  $\varnothing 200$  mm models
-  IP67 - rated for demanding environments
-  Positioning accessory to ensure maximum accuracy and a more structured installation
-  Provides a standard output of 100 mV/kA at 50 Hz



## General Technical Specifications

|                                     |                              |  |
|-------------------------------------|------------------------------|--|
|                                     | Secondary output voltage     | 100mV @50Hz, IP = 1 kA ( $R_{bmin} \geq 10k\Omega^2$ ) |
|                                     | Rated frequency              | 50Hz - 60Hz  |
|                                     | Accuracy                     | 0,5%*  |
|                                     | Position Sensitivity         | 1%   |
|                                     | Linearity Error              | 0.2%   |
|                                     | Error due to external fields | 2%   |
| Electrical safety                   | Isolation                    | Double   |
|                                     | Overvoltage category         | 1000 V CAT III / 600 V CAT IV                          |
|                                     | Dielectric strength          | 5.4kV 50Hz   |
| Environmental and physical features | Material                     | UL94 V0  |
|                                     | Couplings Material           | PA V0  |
|                                     | Operating temperature        | -20 to +80 °C  |
|                                     | Storage temperature          | -40 to +80 °C  |
|                                     | Relative humidity            | 15 to 85% (non-condensing)                             |
|                                     | Protection Rating            | IP67   |
|                                     | Probe cable diameter         | 8 mm   |





\* Calibrated at the positioning accessory reference point

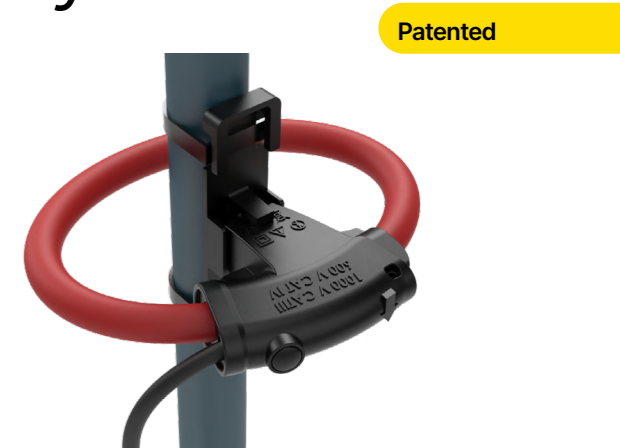
# Positioning Accessory

Ensure perfect conductor alignment for high accuracy.

Magnetic Flex positioning accessory ensures the conductor remains aligned inside the Rogowski sensor, enhancing measurement accuracy and contributing to a cleaner, more organized installation.

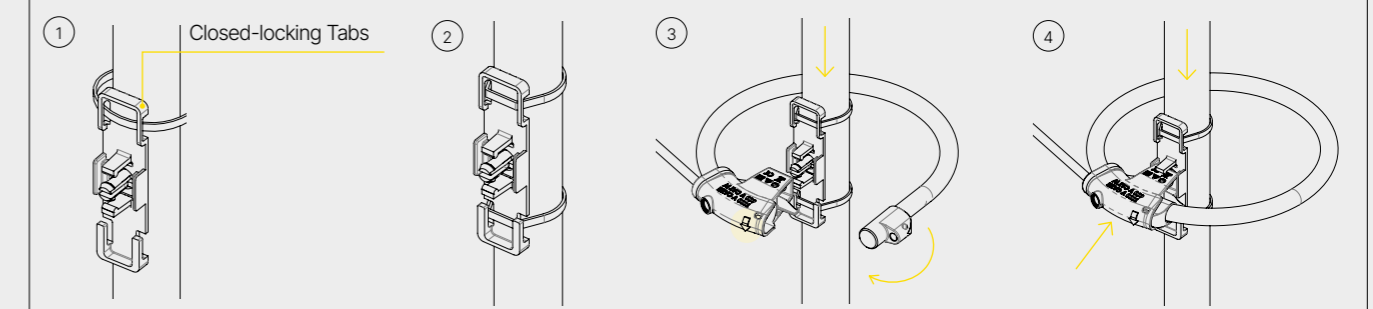
→ Key Features:

-  Designed for the Magnetic Flex to enhance high measurement accuracy
-  Keeps the primary conductor well aligned for high accuracy
-  It adapts easily to different conductor sizes and applications.
-  Allows handling of the sensor without removing the accessory from the conductor

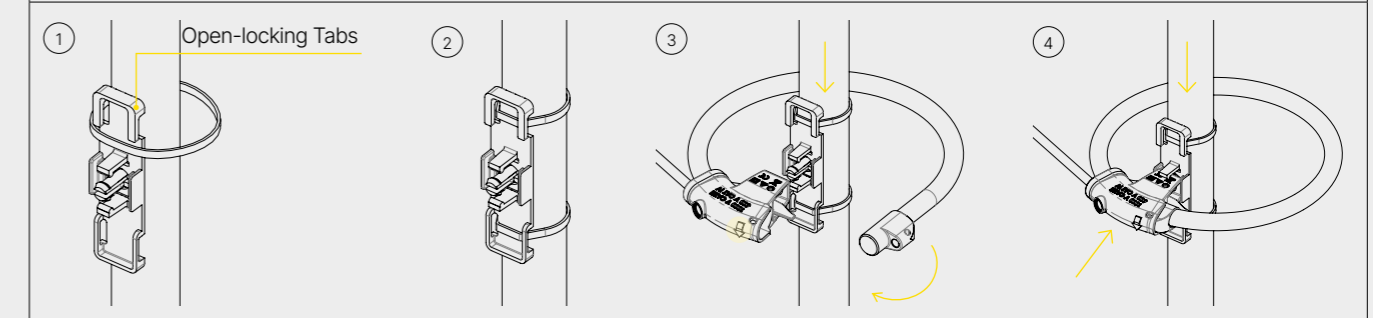


## Installation

**Option 1** - Install the accessory and the cable tie simultaneously.



**Option 2** - Install the cable tie first, then attach the accessory.







# Magnetic Flex Kit

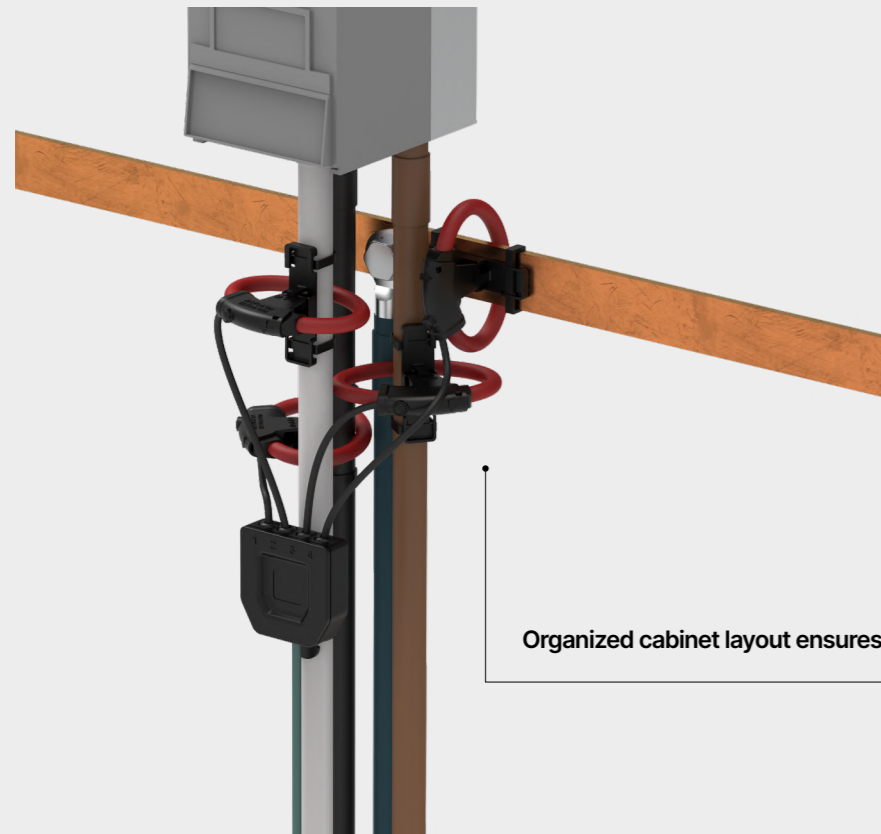
**Compact and precise multi-sensor solution that combines multiple Magnetic Flex sensors into one output cable**

The Magnetic Flex Kit integrates outputs from several Magnetic Flex sensors into a single cable, simplifying wiring and improving panel organization. A compact and efficient solution designed for fast integration in OEM systems or retrofit projects.

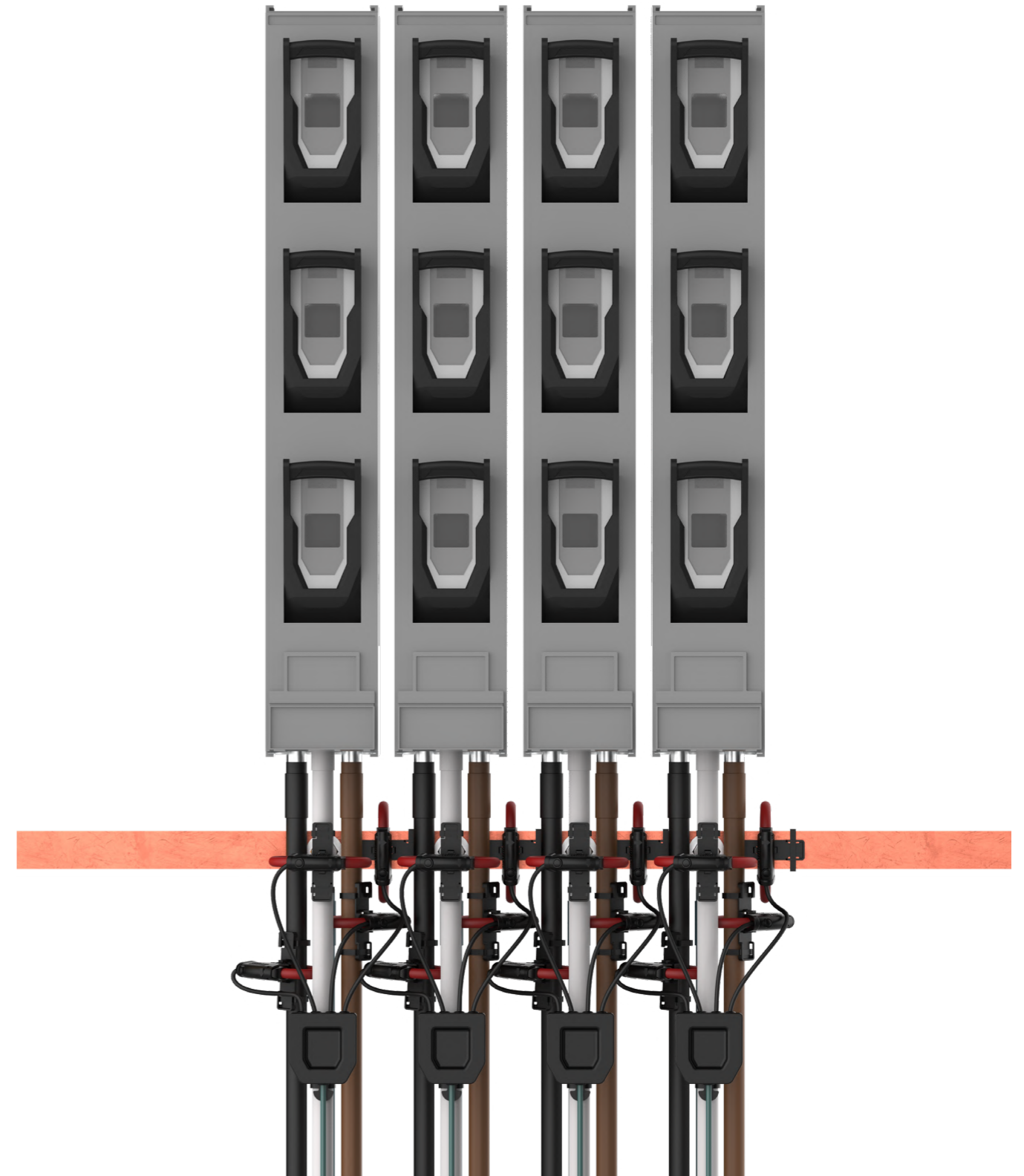


→ **Key Features:**

-  Combines multiple Magnetic Flex sensors into a single output cable
-  IP67 - rated for demanding environments
-  Multiple connector and cable length options for easy integration
-  Available in 3- or 4-coil kits for multi-point current measurement



Organized cabinet layout ensures accurate and efficient energy monitoring.







# C Flex

Designed for secure, accurate current measurement with a mechanical closure system.

C Flex is Smilics' most robust family of Rogowski sensors, designed for accurate current measurement in electrically demanding environments. Featuring a reinforced flexible body and available in two versions: the C Flex, and C Flex Pro. Both models offer customizable options and are ideal for OEM integration and retrofit applications alike.



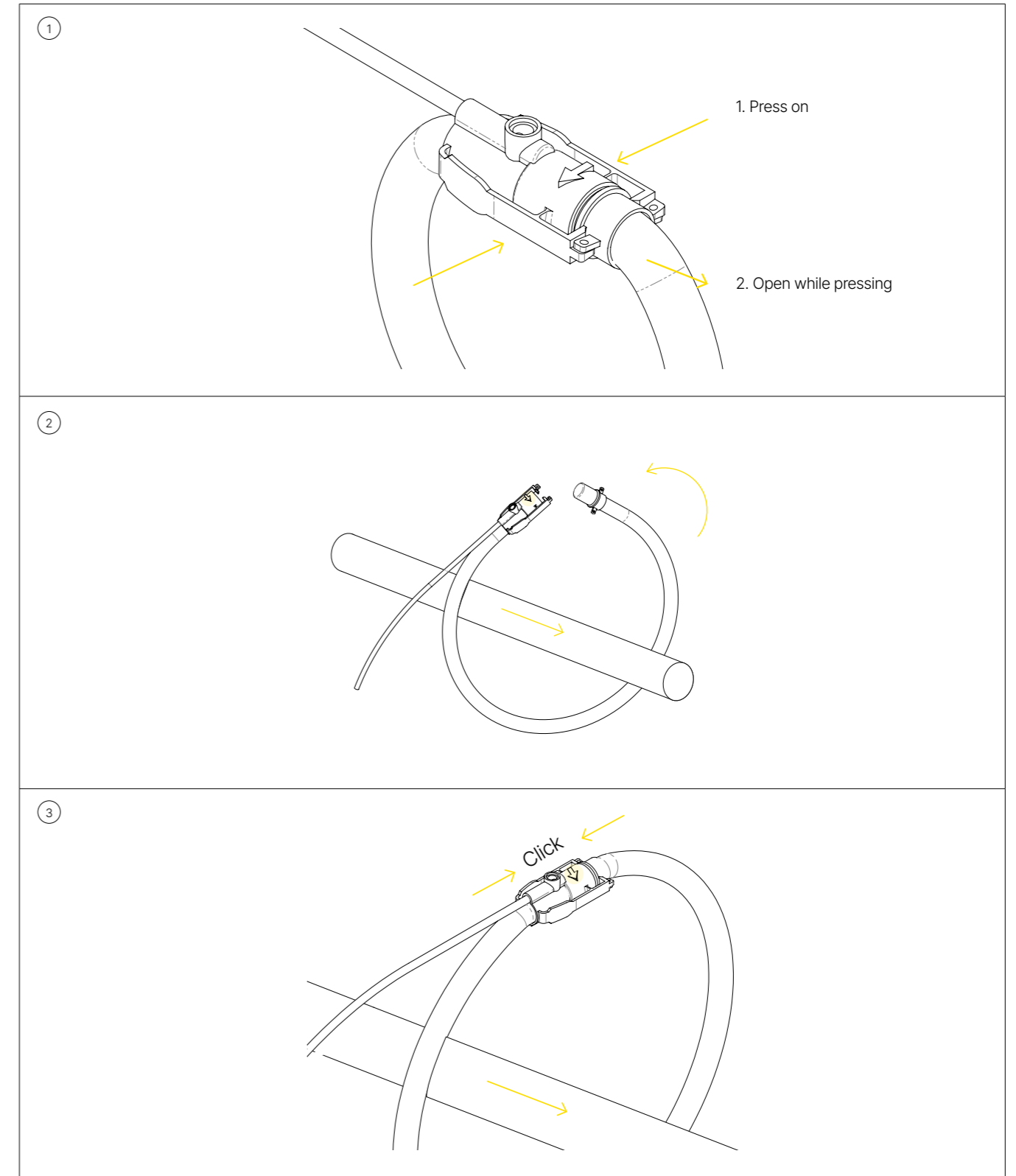
→ Key Features:

-  Available with sensing apertures of: **C Flex** ø150, ø170, ø260, ø350, ø380 and **C Flex Pro** ø90, ø240
-  Featuring a secure mechanical closure system
-  Accuracy Class: C Flex 1-A1 and C Flex Pro 0.5s-A1
-  Standard output at 50 Hz: C Flex 76 mV/kA and C Flex Pro 300 mV/kA

### General Technical Specifications

|                                     |                              | C Flex  | C Flex Pro   |
|-------------------------------------|------------------------------|---|--|
| General                             | Secondary output voltage     | 76mV @50Hz, IP = 1 kA (Rbmin≥10kΩ) <sup>2</sup> | 300 mV @50Hz, I <sub>P</sub> = 1kA (Rb <sub>min</sub> ≥20kΩ) |
|                                     | Rated frequency              | 50Hz - 60Hz                                     | 50Hz - 60Hz  |
|                                     | Accuracy Class               | 1 – A1 according to IEC 61869-10                | 0.5S – A1 according to IEC 61869-10                          |
|                                     | Position Sensitivity         | 1%  | 1-3%   |
|                                     | Linearity Error              | 0.2%  | ± 0.2%   |
|                                     | Error due to external fields | 2%  | 0.25%  |
| Electrical safety                   | Isolation                    | Double  | Double   |
|                                     | Overvoltage category         | 1000 V CAT III / 600 V CAT IV                   | 1000 V CAT III / 600 V CAT IV                                |
|                                     | Dielectric strength          | 5.4kV 50Hz                                      | 5.4kV 50Hz   |
| Environmental and physical features | Material                     | UL94 V0   | UL94 V0  |
|                                     | Couplings Material           | PA V0   | PA V0  |
|                                     | Operating temperature        | -20 to +80 °C                                   | -20 to +80 °C  |
|                                     | Storage temperature          | -40 to +80 °C                                   | -40 to +80 °C  |
|                                     | Relative humidity            | 15 to 85% (non-condensing)                      | 15 to 85% (non-condensing)                                   |
|                                     | Protection Rating            | IP41  | IP41   |
|                                     | Probe cable diameter         | 14 mm   | 14 mm  |

### Installation







# AM Flex

Ensures exclusive compatibility for your equipment with the active Rogowski sensor.

Designed for OEM integration, AM Flex combines a Rogowski sensor and built-in integrator to ensure exclusive compatibility with your equipment. It prevents third-party sensor connections, giving you control over performance and service. The flexible design allows for easy installation without interrupting the power supply, combining precision, security and ease of integration.



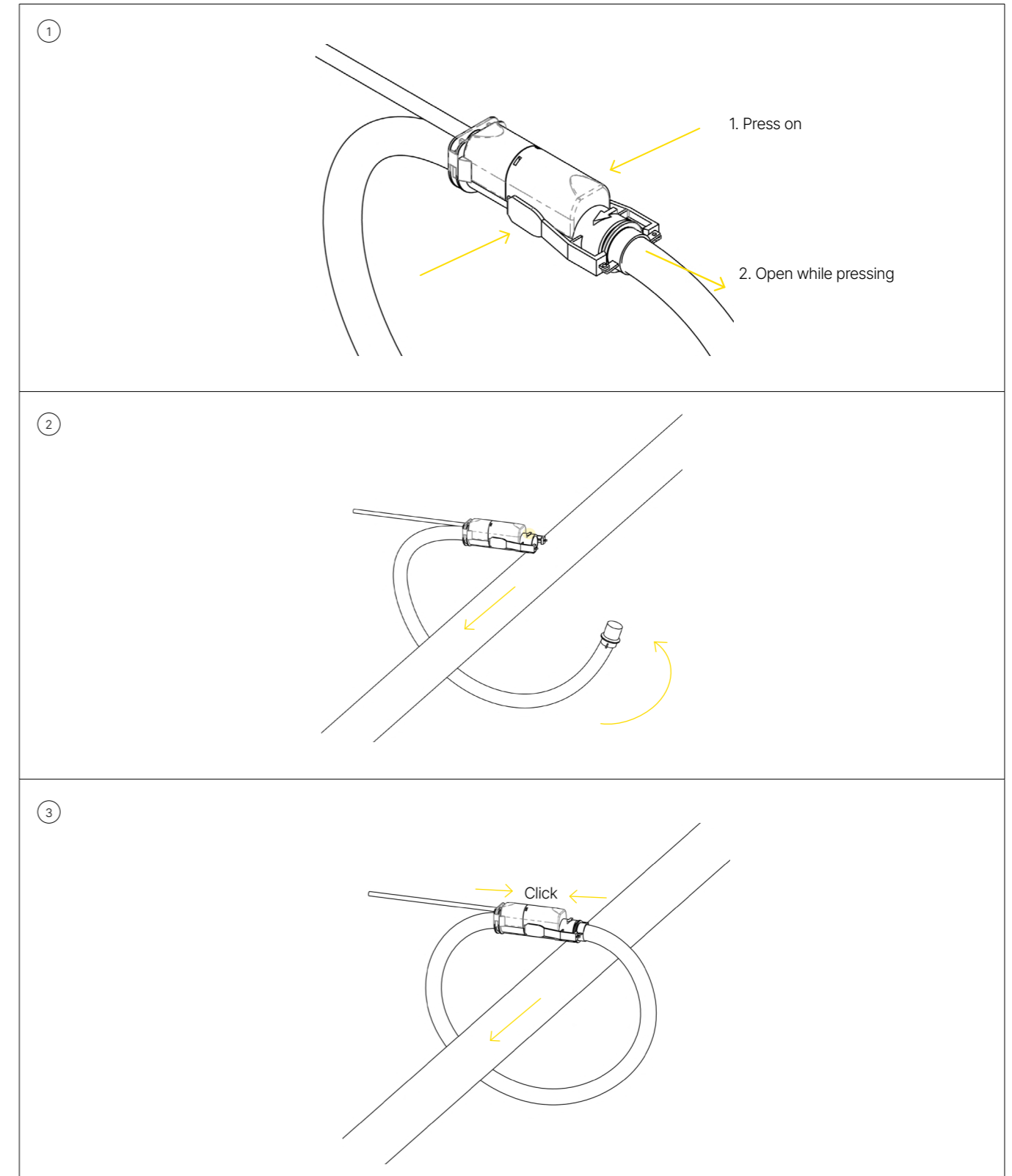
→ Key Features:

-  Available with sensing apertures of  $\varnothing 170$ ,  $\varnothing 350$  mm for the wide range of installations
-  Built-in integrator tailored to your equipment, ensuring exclusive compatibility
-  Standard output voltage of 1.28 V f.s., enabling current scaling to 100 A, 1 kA or 10 kA via pulse-based switching
-  Easy installation with our «click and close» closure system.

General Technical Specifications

|                                     |                              |  |
|-------------------------------------|------------------------------|--|
| Electrical features                 | Rated primary current        | 100A /1kA /10kA (50A/500A/5kA available) |
|                                     | Standard outout voltage      | 1,28 V f.s.                              |
|                                     | Typical phase shift          | <1°                                      |
|                                     | Power supply                 | 5V DC                                    |
|                                     | Rated frequency              | 20Hz - 10kHz                             |
|                                     | Accuracy Class               | 1 – A1 according to IEC 61869-10         |
|                                     | Position sensitivity         | 1%                                       |
|                                     | Linearity Error              | 0.6%                                     |
|                                     | Error due to external fields | 2%                                       |
|                                     | Max. Temperature coefficient | $\pm 0.13\%$ / °C                        |
| Electrical safety                   | Isolation                    | Double                                   |
|                                     | Overvoltage category         | 1000 V CAT III / 600 V CAT IV            |
|                                     | Dielectric strength          | 5.4kV 50Hz                               |
| Environmental and physical features | Material                     | UL94 V0                                  |
|                                     | Couplings Material           | PA V0                                    |
|                                     | Operating temperature        | -20 to +80 °C                            |
|                                     | Storage temperature          | -40 to +80 °C                            |
|                                     | Relative humidity            | 15 to 85% (non-condensing)               |
|                                     | Protection Rating            | IP54                                     |
| Probe cable diameter                | 14 mm                        |  |

Installation







# DIN Flex

Converts the mV output of AM Flex into a standard /1A signal. Ideal solution for full system integration.

DIN Flex is the adapter that converts the mV output of the Rogowski sensor into a standard /1A signal, fully compatible with measurement and protection equipment. It is supplied as a complete, factory-calibrated set, and is only available when combined with our AM Flex sensor, forming the AM DIN configuration. The adapter also supplies power to the Rogowski sensors and allows simultaneous scaling.



→ Key Features:

-  Offers different scale configurations such as 50/500/5k A and 100/1k/10k A
-  Customizable to fit OEM requirements: output ranges, cable lengths and connectors
-  Available as a complete AM DIN Flex Kit with three standalone adapters, each paired with a factory-calibrated Rogowski sensor, and one power supply for the adapter
-  Allows easy installation on a DIN module

### General Technical Specifications

|                        |                          |  |
|------------------------|--------------------------|--|
| Electrical features    | Type                     | 100 A /1k A /10k A (50 A/500 A/5k A available) |
|                        | Output Current           | 1A   |
|                        | Power supply             | 18 to 24V DC                                   |
|                        | Rated frequency          | 50Hz-60Hz                                      |
|                        | Rogowski Sensor Accuracy | Class 1 – A1 according to IEC 61869-10         |
|                        | Equipment Consumption    | 50mA (DC) (800mA Start)                        |
| Environmental features | Material                 | UL94 V0  |
|                        | Operating temperature    | -20 to +70 °C                                  |
|                        | Storage temperature      | -40 to +80 °C                                  |
|                        | Protection Rating        | IP20   |
|                        | Altitude                 | < 4000 m                                       |



### AM DIN Flex

A ready-to-use measurement pair minimizing setup time and installation errors

### Metrological features

| Parameter                      | Units            | Model | 50 A | 500 A | 5K A     | 100 A | 1K A     | 10K A      |
|--------------------------------|------------------|-------|------|-------|----------|-------|----------|------------|
| Nominal Range                  | A                |       | 50   | 500   | 5 000    | 100   | 1 000    | 10 000     |
| Relation                       | A/A              |       | 50/1 | 500/1 | 5000/1   | 100/1 | 1000/1   | 10000/1    |
| Operating Use                  | A                |       | 1-50 | 5-500 | 50-5 000 | 1-100 | 10-1 000 | 500-10 000 |
| Crest factor at $I_n$          | -                |       | 1,1  | 1,1   | 1,1      | 1,1   | 1,1      | 1,1        |
| Residual noise                 | A <sub>RMS</sub> |       | 0,25 | 0,25  | 0,25     | 0,25  | 0,25     | 0,25       |
| Typical phase shift            | -                |       | 1°   | 1°    | 1,5°     | 1°    | 1°       | 1,5°       |
| Range indicator (DIN AM)       | -                |       | ●    | ●     | ● ●      | ●     | ●        | ● ●        |
| Scale display LEDs on DIN FLEX | -                |       | ● ○  | ● ○   | ● ●      | ● ○   | ● ○      | ● ●        |

# Standard References

## Magnetic Flex

|    | Code    | Description       | Output | Accuracy | Diameter | Output Cable Length | Termination         | N° sensors |
|----|---------|-------------------|--------|----------|----------|---------------------|---------------------|------------|
| 1  | RC01051 | Magnetic Flex     | 100mV  | 0,5%     | 70mm     | 2m                  | Stripped wires (x3) | 1          |
| 2  | RC01039 | Magnetic Flex     | 100mV  | 0,5%     | 70mm     | 3m                  | Stripped wires (x3) | 1          |
| 3  | RC01040 | Magnetic Flex     | 100mV  | 0,5%     | 70mm     | 4m                  | Stripped wires (x3) | 1          |
| 4  | RC01041 | Magnetic Flex     | 100mV  | 0,5%     | 120mm    | 2m                  | Stripped wires (x3) | 1          |
| 5  | RC01042 | Magnetic Flex     | 100mV  | 0,5%     | 120mm    | 4m                  | Stripped wires (x3) | 1          |
| 6  | RC01043 | Magnetic Flex     | 100mV  | 0,5%     | 200mm    | 2m                  | Stripped wires (x3) | 1          |
| 7  | RC01044 | Magnetic Flex     | 100mV  | 0,5%     | 200mm    | 4m                  | Stripped wires (x3) | 1          |
| 8  | RC01045 | Magnetic Flex Kit | 100mV  | 0,5%     | 70mm     | 0,5m - 3m*          | RJ45 connector      | 4          |
| 9  | RC01046 | Magnetic Flex Kit | 100mV  | 0,5%     | 70mm     | 0,5m - 1m*          | M12 connector       | 4          |
| 10 | RC01047 | Magnetic Flex Kit | 100mV  | 0,5%     | 70mm     | 0,5m - 3m*          | M12 connector       | 4          |
| 11 | RC01048 | Magnetic Flex Kit | 100mV  | 0,5%     | 70mm     | 0,5m - 3m*          | PIN connector       | 4          |
| 12 | RC01049 | Magnetic Flex Kit | 22,5mV | 0,5%     | 70mm     | 0,5m - 3m*          | RJ45 connector      | 3          |
| 13 | RC01050 | Magnetic Flex Kit | 22,5mV | 0,5%     | 70mm     | 0,5m - 3m*          | RJ45 connector      | 4          |

\* Meters of cable between the Kit and each Magnetic Flex sensor - meters of cable between the connector and the Kit Magnetic.

## C Flex

|   | Code    | Description | Output | Accuracy | Diameter | Output Cable Length | Termination                         | N° sensors |
|---|---------|-------------|--------|----------|----------|---------------------|-------------------------------------|------------|
| 1 | RC02000 | C Flex      | 76mV   | 1%       | 150mm    | 2m                  | Stripped wires (x3)                 | 1          |
| 2 | RC02001 | C Flex      | 76mV   | 1%       | 170mm    | 2m                  | Stripped wires (x3)                 | 1          |
| 3 | RC02002 | C Flex      | 76mV   | 1%       | 260mm    | 2m                  | Stripped wires (x3)                 | 1          |
| 4 | RC02003 | C Flex      | 76mV   | 1%       | 350mm    | 2m                  | Stripped wires (x3)                 | 1          |
| 5 | RC02004 | C Flex      | 76mV   | 1%       | 380mm    | 2m                  | Stripped wires (x3)                 | 1          |
| 6 | RC02005 | C Flex Pro  | 300mV  | 0,5S %   | 90mm     | 3,5m                | Ring terminal (x1)<br>Ferrules (x2) | 1          |
| 7 | RC02006 | C Flex Pro  | 300mV  | 0,5S %   | 240mm    | 3,5m                | Ring terminal (x1)<br>Ferrules (x2) | 1          |

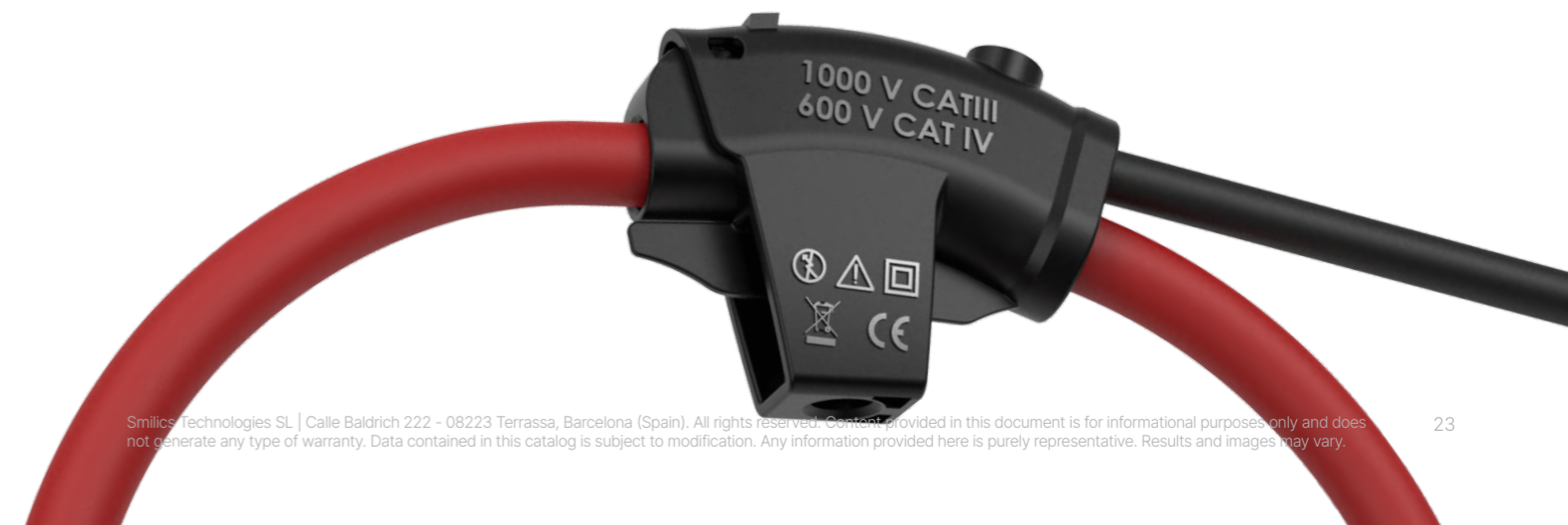
## AM Flex

|   | Code    | Description | Output      | Accuracy | Diameter | Output Cable Length | Termination   | N° sensors |
|---|---------|-------------|-------------|----------|----------|---------------------|---------------|------------|
| 1 | RC03005 | AM Flex     | 1,28 V f.s. | 1%       | 350mm    | 2m                  | ODU connector | 4          |
| 2 | RC03004 | AM Flex     | 1,28 V f.s. | 1%       | 350mm    | 2m                  | ODU connector | 3          |
| 3 | RC03003 | AM Flex     | 1,28 V f.s. | 1%       | 350mm    | 2m                  | ODU connector | 1          |
| 4 | RC03002 | AM Flex     | 1,28 V f.s. | 1%       | 170mm    | 2m                  | ODU connector | 4          |
| 5 | RC03001 | AM Flex     | 1,28 V f.s. | 1%       | 170mm    | 2m                  | ODU connector | 3          |
| 6 | RC03000 | AM Flex     | 1,28 V f.s. | 1%       | 170mm    | 2m                  | ODU connector | 1          |

## DIN Flex

|   | Code    | Description | Output | Diameter | Output Cable Length | Scale configurations | N° sensors | Power Supply |
|---|---------|-------------|--------|----------|---------------------|----------------------|------------|--------------|
| 1 | RC05001 | AM DIN Kit  | 1A     | 170mm    | 2m                  | 100A / 1kA / 10kA    | 3          | Yes          |
| 2 | RC05002 | AM DIN Kit  | 1A     | 170mm    | 2m                  | 50A / 500A / 5kA     | 3          | Yes          |
| 3 | RC05003 | AM DIN Kit  | 1A     | 350mm    | 2m                  | 100A / 1kA / 10kA    | 3          | Yes          |
| 4 | RC05004 | AM DIN Kit  | 1A     | 350mm    | 2m                  | 50A / 500A / 5kA     | 3          | Yes          |
| 5 | RC05006 | AM DIN      | 1A     | 170mm    | 2m                  | 100A / 1kA / 10kA    | 1          | -            |
| 6 | RC05007 | AM DIN      | 1A     | 170mm    | 2m                  | 50A / 500A / 5kA     | 1          | -            |
| 7 | RC05008 | AM DIN      | 1A     | 350mm    | 2m                  | 100A / 1kA / 10kA    | 1          | -            |
| 8 | RC05009 | AM DIN      | 1A     | 350mm    | 2m                  | 50A / 500A / 5kA     | 1          | -            |

**Note:** Additional configurations are available upon request to meet specific installation requirements, subject to technical evaluation.





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