

Technical Specification

Close Loop current sensors OPCO500M3

Features :

- High accuracy
- Very good linearity
- Easy installation
- Can be customized
- Low temperature drift
- Optimized response time
- High immunity to external interference



The OPCO 500 is a closed-loop current sensor (also known as a compensated current transducer), designed for the precise measurement of AC and DC currents up to 500A. This sensor uses Hall Effect technology in a closed-loop configuration, providing high accuracy and excellent linearity in the measurement of both alternating and direct currents.

The OPCO 500 operates with a typical supply voltage of ($\pm 15V$ to $\pm 24V$) $\pm 5\%$ and ensures full galvanic isolation between the primary and secondary circuits. This isolation is crucial for protecting sensitive equipment in industrial and high-power environments, where large potential differences can exist between circuits.

Applications :

- Battery supply applications.
- Uninterruptible Power Supplies (UPS).
- Static Converter for Motor drives.
- Inverter and variable frequency drives.
- Power supplies for welding application.
- Switching power suppliers
- Renewable Energy (solar & Wind)
- Propulsion converters.
- Three phase or single inverters.

Standards:

- IEC60950-1:2001
- EN50178:1998
- Plastic material : PBT G30/G15, UL94- V0

Application Domaine:

- Industrial

Code	Part Number	Connector
1010223300503C1	OPCO500M3	Molex 22272041

Part Number	Primary Nominal Current	Primary Current Measuring Range
OPCO500M3	500A	± 1570 A

Technical Specification

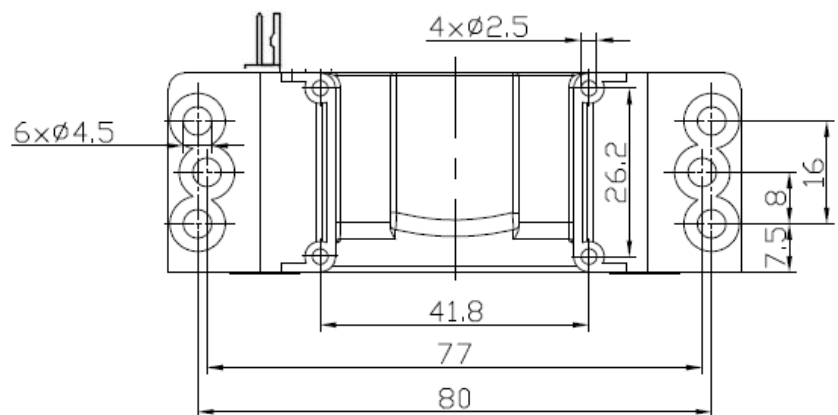
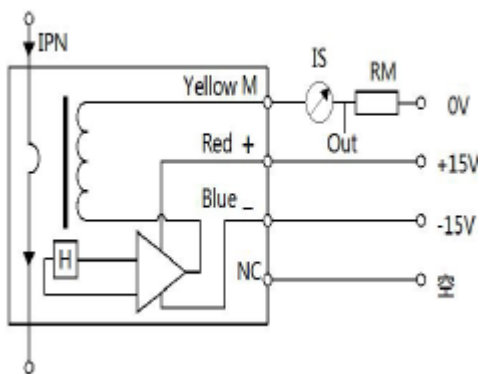
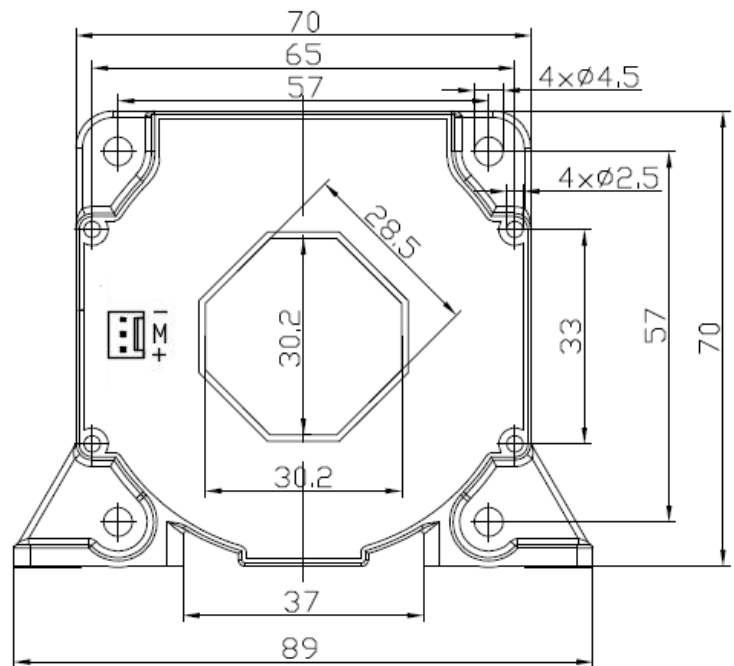
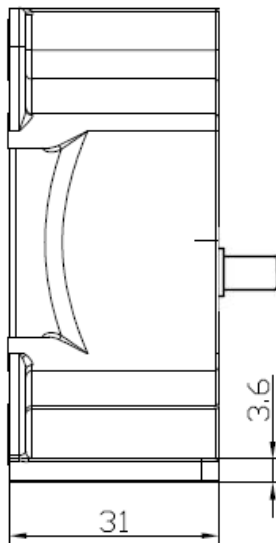
Specifications:

$T_A = +25^{\circ}\text{C}$, $V_{CC} = \pm 15\text{V}$

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Primary nominal r.m.s Current	I_{PN}		-	500	-	A
Primary Current measuring range	I_{PM}		-1570	-	1570	A
Turns ratio N_p/N_s	N_p/N_s		-	1:5000	-	
Secondary nominal r.m.s. current	I_{SN}		-	100	-	mA
Secondary coil resistance	R_s		-	52	-	Ω
Supply Voltage	V_{CC}	$\pm 5\%$	± 15	-	± 24	V
Offset Current	I_{OE}	@ $I_{PN}, T=25^{\circ}\text{C}$	-	$< \pm 0.2$	-	mA
Temperature variation of I_{OE} I_{OT}		@ $I_P=0, -40 \sim +85^{\circ}\text{C}$	-	$< \pm 0.5$	-	mA/ $^{\circ}\text{C}$
Linearity Error	ε_L		-	< 0.1	-	%
Accuracy	XG	@ $I_{PN}, T=25^{\circ}\text{C}$	-	$< \pm 0.5$	-	% I_{PN}
di/dt accurately followed	di/dt	-		> 100	-	A/ μs
Frequency Bandwidth	Bw	-3 dB, I_{PN}	DC	-	150	kHz
Response Time	T_r	90% of V_{PN}	-	< 1.0	-	μs
Power consumption	I_C		-	$20 + I_s$	-	mA
Insultation Voltage	V_d	@50/60Hz, 1min, AC	-	6.0	-	kV
Operating temperature	T_A		-50	-	+85	$^{\circ}\text{C}$
Storage temperature	T_s		-55	-	+125	$^{\circ}\text{C}$
Mass	M		-	300	-	g

Technical Specification

DIMENSIONS



- General tolerance : $< \pm 0.5$ mm
- Transducer Fastening : Vertical position - 6 holes $\varnothing 4.5$ mm
6 M4 steel screws
: Horizontal position - 4 holes $\varnothing 4.5$ mm
4 M4 steel screws
- Recommended fastening torque : 2.1 Nm ($\pm 10\%$)
- Connection of secondary : Molex 2501-3

Technical Specification

- When the current goes through the primary pin of a sensor, the voltage will be measured at the output end.
- Custom design is available for the different rated input current and the output voltage.
- The dynamic performance is the best when the primary hole is fully filled with.
- The primary conductor should be $<100^{\circ}\text{C}$

1. General Safety Warnings

- **Intended Use:** This transducer is designed for installation in electrical and electronic systems. It must be used in compliance with applicable international standards, such as **IEC 61010-1**, as well as local regulations and codes.
- **Applicable Standards:** The transducer must be operated according to the Adisens's operating instructions to ensure compliance with relevant safety standards, including:
 - **IEC 61010-1:** Safety requirements for electrical equipment for measurement, control, and laboratory use.
 - **EN 50178:** Safety requirements for electronic equipment for power installations.
- **Installation by Qualified Personnel:** Only qualified professionals, trained in handling high-voltage systems and electrical components, should install, commission, and maintain the transducer. Misuse or incorrect installation may result in electric shock, fire, or severe equipment damage.

2. Electrical Shock Risk

- **Risk of Electric Shock:** This transducer operates in high-voltage environments. It must be handled with care to avoid direct contact with live electrical components. There is a risk of serious injury or death from electric shock if proper precautions are not taken.
- **Limited-Energy Secondary Circuits:** To ensure safe operation, this transducer must be used exclusively within limited-energy secondary circuits, as specified by **IEC 61010-1**, which governs the safe design of electrical circuits to reduce the risk of injury and electrical hazards.
- **Isolation Requirements:** This transducer provides galvanic isolation between the primary (high-power) and secondary (low-power) circuits. However, the device should not be assumed to provide absolute protection against electric shock. Always de-energize circuits before installation or maintenance.

3. Installation Precautions

- **Environmental Conditions:** The transducer is designed to operate in controlled environments. Ensure that the operating temperature, humidity, and surrounding conditions comply with the transducer's specifications provided in the technical datasheet. Avoid exposure to moisture, corrosive environments, or areas prone to electrical interference.
- **Mounting:** Secure the transducer properly in a location that prevents movement or vibration during operation. Improper mounting may cause electrical arcing or contact with live components.
- **Grounding:** Ensure that the transducer is correctly grounded in accordance with the electrical system design. This will help prevent electric shock and improve system safety and performance.

Technical Specification

4. Operational Guidelines

- **Operating Limits:** Operate the transducer strictly within the specified voltage, current, and temperature ranges. Overloading the transducer beyond its rated capacity may result in equipment failure or create safety hazards.
- **Routine Maintenance:** Inspect the transducer regularly for signs of wear, damage, or abnormal operation. Discontinue use if any issues are detected and consult the manufacturer for replacement or repair.

5. Handling and Storage

- **Handling Precautions:** Avoid direct contact with transducer terminals during handling. Always handle the device with protective gear, including insulated gloves, to avoid accidental electric shock.
- **Storage Conditions:** Store the transducer in a clean, dry, and temperature-controlled environment. Prolonged exposure to harsh conditions may degrade performance and compromise safety.

6. Emergency Procedures

- **Power Disconnection:** In case of a malfunction, electrical fault, or other emergency, immediately disconnect the power supply to the transducer and seek professional assistance for inspection and repair.
- **First Aid:** If an electric shock occurs, follow established first aid protocols and seek emergency medical assistance immediately.

7. Disposal

- **Environmental Considerations:** Dispose of the transducer according to local regulations for electronic waste. Do not incinerate, and avoid disposing of the device in general waste, as it may contain hazardous materials.

8. Manufacturer's Support

For additional information, technical support, or to report any issues with the transducer, please contact us on contact@adisens.fr. Ensure that you have the model number, serial number, and installation details on hand for a prompt response.