

## Technical Specification

### Hall Current Sensor VPS-C-400M3

#### Features :

- ◆ Low temperature drift
- ◆ Only one design for wide current ratings range
- ◆ Low power consumption
- ◆ High immunity to external interference
- ◆ Very low insertion losses
- ◆ Current overload capability



The VPS-C-400M3 is an open-loop current transducer specifically designed for the electronic measurement of DC, AC, pulsed and mixed currents. It provides galvanic isolation between the primary circuit (high power) and the secondary circuit (electronics), enabling accurate measurements over a wide range of current waveforms. Its shape makes it easy to fit into compact spaces, making it particularly suitable for cables and busbars up to 32mm wide.

#### Applications :

- ◆ AC variable speed drives and servo motor
- ◆ Battery supplied applications
- ◆ Switched Mode Power Supplies (SMPS)
- ◆ Uninterruptible Power Supplies (UPS)
- ◆ Power supplies for welding applications
- ◆ Static converters for DC motor drives

#### Application Domaine:

- Industrial

Part Number	Connector
VPS-C-XXXM3	Molex 22272041
VPS-C-XXXS3	JST BH3P-VH-1
VPS-C-XXXH3	Phoenix Contact 3Pts
VPS-C-XXXK3	Cable 2 m
VPS-C-XXXJ3	Molex minifit Jr5566

Part Number	Primary Nominal Current	Primary Current Measuring Range
VPS-C-400M3	400A	±1200 A

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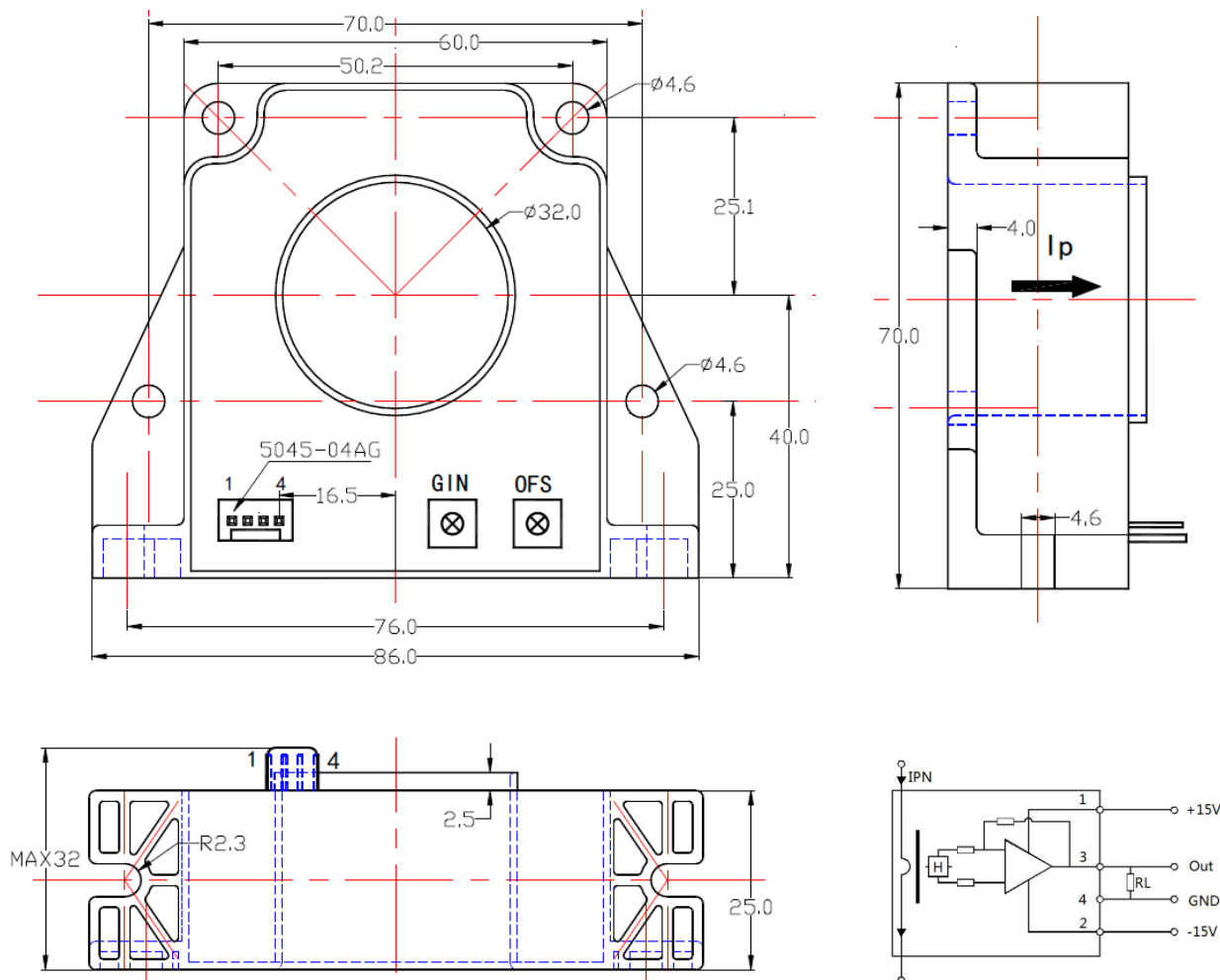
### SPECIFICATIONS:

$T_A = +25^{\circ}\text{C}$  ,  $V_{CC} = \pm 15\text{VDC}$  ,  $R_L = 2.0\text{ K}\Omega$  , unless otherwise noted

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>ELECTRICAL DATA</b>						
Primary nominal r.m.s Current	$I_{PN}$		-	400	-	A
Primary Current measuring range	$I_{PM}$		-1200	-	1200	A
Output Voltage	$V_{OUT}$	$V_{OE} + S \times I_P$	-	$\pm 4$	-	mV
Supply Voltage	$V_{CC}$	$\pm 5\%$	-	$\pm 15$	-	V
Current Consumption	$I_C$	@ $0 \dots \pm I_{PN}$	-	< 15	-	mA
Offset voltage	$V_O$	@ $I_{PN}=0, T_A=25^{\circ}\text{C}$	-	< $\pm 10$	-	mV
Load Resistance	$R_L$	$I_P=0$ To $\pm I_{PN}$		> 10	-	K $\Omega$
<b>STATIC PERFORMANCE DATA</b>						
Linearity Error	$\varepsilon_L$	$T_A = 25^{\circ}\text{C}, I_P: 0 \text{ to } \pm I_{PN}$	-	< $\pm 0.5\%$	-	% $I_{PN}$
Accuracy	$X_G$	$T_A = +25^{\circ}\text{C}, @ I_{PN}$	-	< $\pm 1\%$	-	% $I_{PN}$
di/dt accurately followed di/dt	di/dt	$T_A = 25^{\circ}\text{C}$	-	> 50	-	A / $\mu\text{s}$
Thermal drift of $V_O$	$V_{OT}$	< $\pm 1\text{mV/}$	-	< $\pm 1$	-	mV/ $^{\circ}\text{C}$
Thermal drift of $V_{OUT}$	$TC_{\varepsilon G}$		-	< $\pm 0.05$	-	%/ $^{\circ}\text{C}$
Hysteresis Offset Voltage	$V_{OH}$	$T_A = +25^{\circ}\text{C}$ $\pm 3I_{PN} \rightarrow 0$	-	$\leq \pm 20$	-	mV
Isolation voltage	$V_d$	@ 90% of $I_{PN}$	-	3.0	-	KV
<b>DYNAMIC PERFORMANCE DATA</b>						
Response Time	$T_r$	90% of $I_{PN}$	-	< 3.0	-	$\mu\text{s}$
Bandwidth	Bw	@ -3 dB, $I_{PN}$	DC	50	-	KHz
Operating Temperature	$T_O$		-40	-	+85	$^{\circ}\text{C}$
Storage Temperature	$T_S$		-40	-	+125	$^{\circ}\text{C}$
Mass	M		-	210	-	g

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### DIMENSION



### MOUNTING RECOMMENDATION

- Mounting method:**
  - 3 ×  $\phi 4.6$  mm holes (pick one)
  - 1 × M4 copper or SS304 screw (recommended applied torque 0.75 N•m)
- Primary through-hole dimensions:**  $\phi : 32$  mm
- Secondary terminal:**
  - Molex 22041041
  - Crimp Housing: Molex 22011042, Crimping Terminal: Molex 08500113

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### REMARKS

1.  $V_{OUT}$  is positive when the primary current is in the same direction as the arrow indication on the label and vice versa.
2. Improper connection can cause permanent damage of the sensor.
3. Excessive capacitive load may result in distortion of output signals when measuring high frequency primary signal. Please refer to Output Voltage vs Load Capacitance Curve.
4. Dynamic performances ( $di/dt$  and response time) are best with a single busbar completely filling the primary hole.
5. Sensor is customizable upon request.

#### 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.

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- **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.

### 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](mailto:contact@adisens.fr). Ensure that you have the model number, serial number, and installation details on hand for a prompt response.