

Current and Voltage Sensors

Distribuidor Oficial



P.I. Can Tapioles c/Narcís Monturiol, 4 Nave 10
08110 Montcada y Reixach, Barcelona, España
Tel. 935790610 comercial@proat.es

ELECTRUHMS



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Electrohms is a leading designer and manufacturer of custom magnetics and sensors for measuring current and voltage. With a wide range of standard components and proven custom design capability, we deliver on innovation, quality and service to our customers worldwide. We have over 50 years of experience in serving our customers in critical applications for industrial, renewable energy, automation and IOT markets .

DESIGNER'S CHOICE

We are a one stop shop for AC/DC measurement of current and voltage as well as custom magnetics.

Our wide range of standard products makes it easy for designers to create high performance and cost effective solutions.

CUSTOMISATION

We are willing to go the extra mile to deliver a customized product where required to create outstanding end system performance.

Using smart design tools and rapid prototyping our engineers deliver your prototypes and final samples on time.

PRODUCT RELIABILITY

Reliability starts from a robust design and engineering processes. We follow DFMEA and APQP processes and ensure delivery of highly reliable products.

All product families undergo a full cycle of qualification testing which includes extreme temperature cycling, dry and damp heat tests, vibration and EMI. We offer our customers qualification data on demand.

We work with top quality supplier and buy electronic components only from reputed brands with proven traceability.

All sensors are 100% tested on automated testing setups.

CERTIFICATIONS AND STANDARDS

We are ISO 9001 certified and all our products meet ROHS 2 requirements which includes CE certificate.

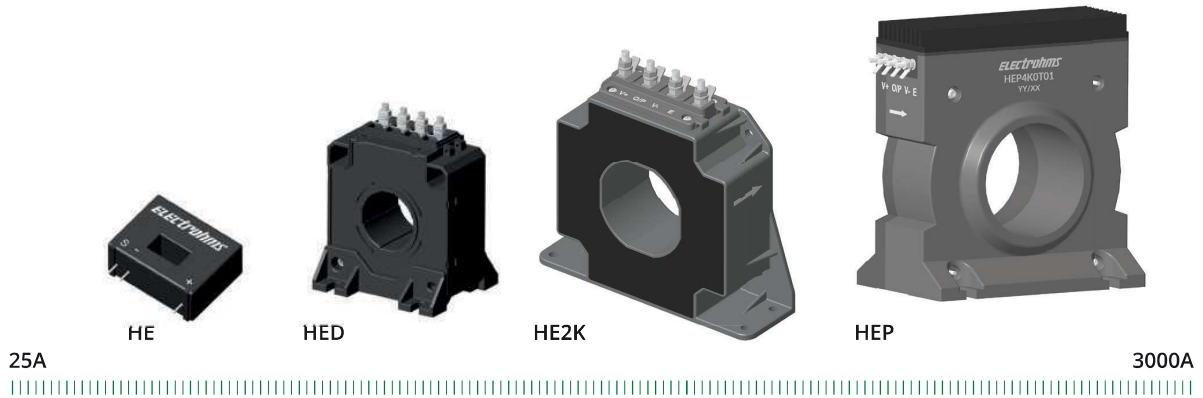
We use UL approved materials. We will get specific products UL certified based on customer demand.

We design and test our products to comply to the following standards:

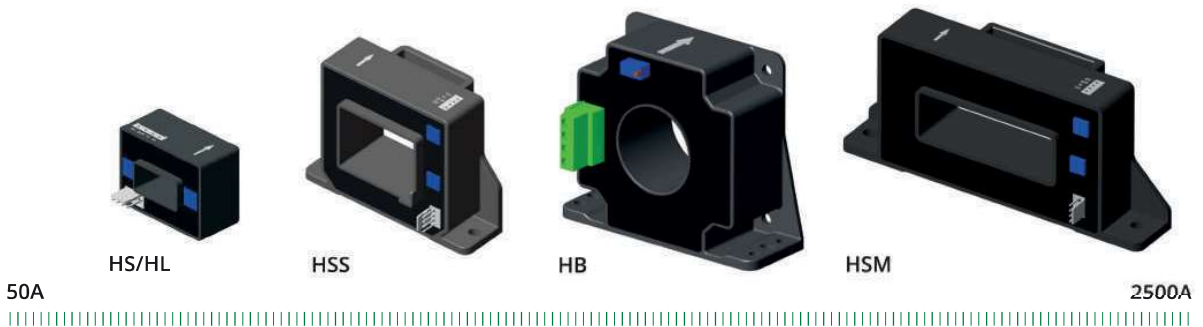
- EN50178 (IEC 62477) : Requirements for electronic equipment for use in power installation
- EN50155 : Railway Applications – Electronic equipment used on rolling stock
- CE certification : as per EMC directive of EU
- UL347 & UL508 : for UL certification
- IEC 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use
- IECEx/ATEX certified products

RANGE OVERVIEW

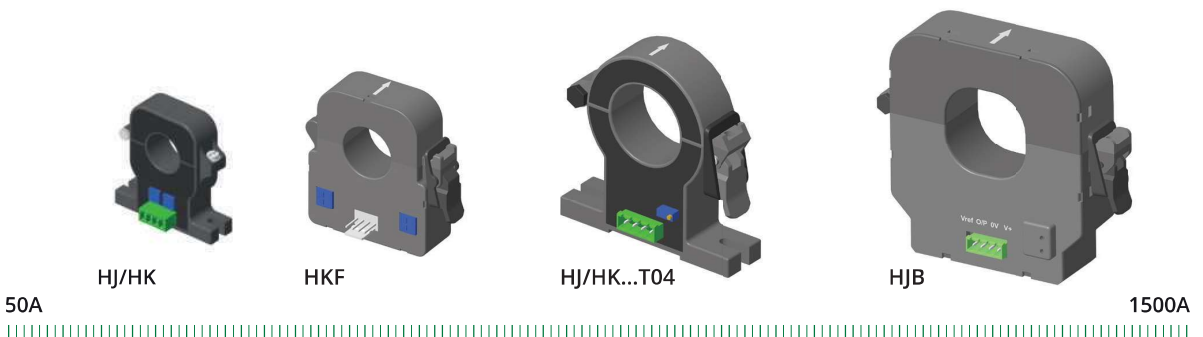
Hall Effect Current Sensor - Closed Loop



Hall Effect Current Sensor - Open Loop

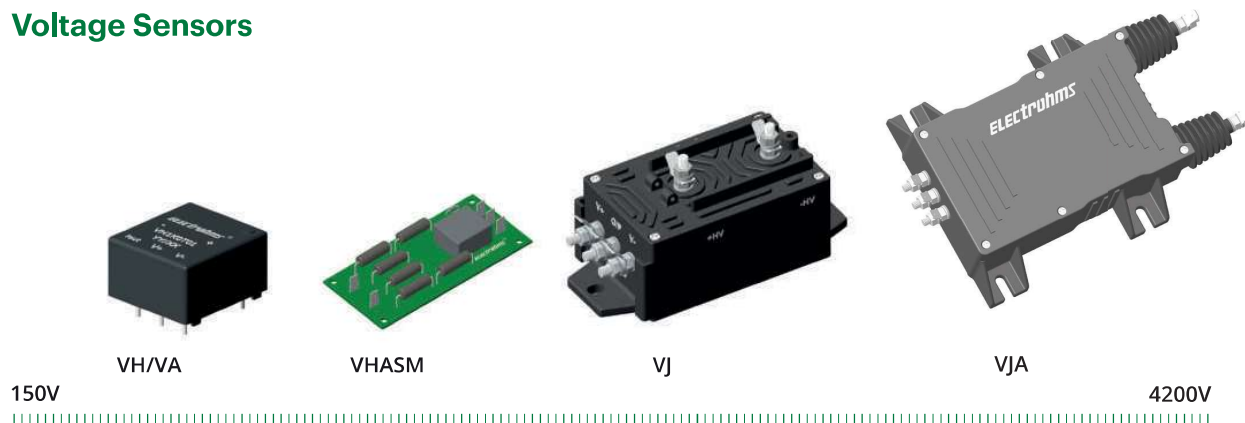


Hall Effect Current Sensor - Split Core

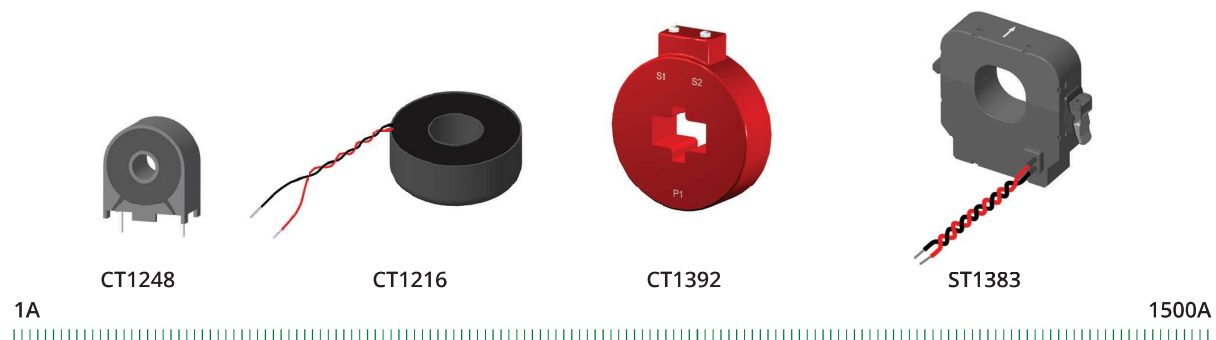


RANGE OVERVIEW

Voltage Sensors

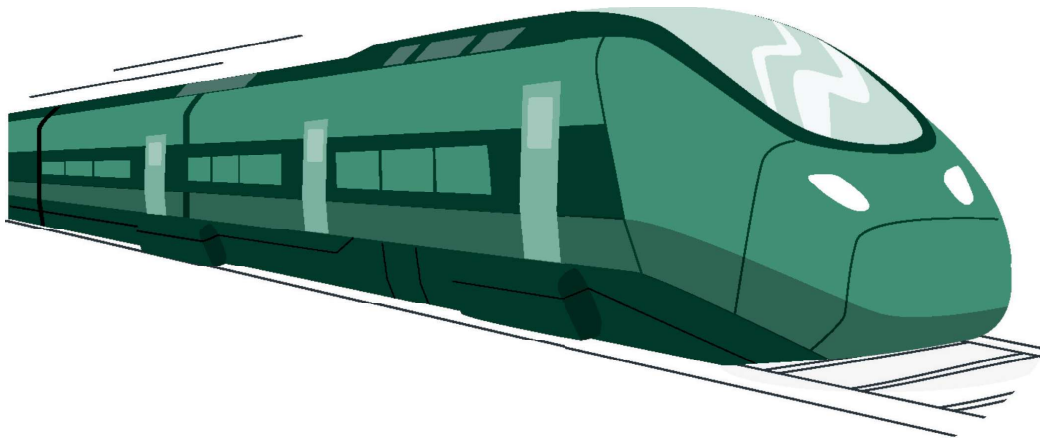


AC Current Sensors



Railways

Electrohms current & voltage sensors are used both in Rolling Stock as well as trackside applications. The control systems of modern traction and auxillary convertors, requires a clear understanding of power electronics design challenges of MW-convertors with bus voltages in several kV. Electrohms has a wide range of high accuracy, extreme reliability transducers for the measurement of currents and voltages for fail safe control and protection circuits in these applications.



On-Board Applications

Electrohms sensors are used in a range of power convertors such as High Power Traction Convertors, Auxillary convertors, Battery chargers and regenerative braking systems.

Traction Converters

Directly control the electric traction motor's speed and torque, converting DC to AC (or vice versa) as required by the motor's operation. ELECTROHMS offers current sensors to measure upto 2000A rms and voltage sensors upto 4.2kV for these critical converter applications meeting stringent quality requirements and global rail standards.

Auxillary Converters & ERRU

Aux convertors power onboard systems such as HVAC, lighting, and other non-traction services. These are typically based on DC-DC or AC-DC conversion principles.

Trackside Applications

Electrohms offers a range AC current transformers and DC sensors in standard and custom solutions which are used in data logging systems for asset monitoring and predictive maintenance.

Current Sensors

Electrohms offers open & closed loop sensors using Hall-Effect technology with a range upto 2000A rms supplied in an a variety of electrical and mechanical options.



KEY FEATURES

ELECTRICAL

- Current output
- Measurement range **upto 2000A rms.**
- High accuracy and linearity
- Low temperature drift
- High bandwidth **upto 100kHz**
- Isolation volatage **upto 12kV**

MECHANICAL

- Fully-encapsulated designs
- Integrated bus-bar locators in select models
- Range of output connector types – **Stud, LEMO, SMS6, WAGO**
- Horizontal & vertical mounting options
- Customised mechanical options available

Voltage Sensors

Electrohms offer voltage sensors using Hall-effect technology and optical isolation technology with a measuring range upto 4.2KV rms supplied in a range of electrical and mechanical options.



KEY FEATURES

ELECTRICAL

- Current and voltage output
- Measurement range **upto 4.2kV**
- Isolation **upto 18.5kV**
- High accuracy and linearity
- Low temperature drifts
- High bandwidth versions **upto 50kHz**
- Low offset levels

MECHANICAL

- Fully encapsulated designs
- Range of output connector types

All our product are CE, ROHS, REACH compliant. Several models are UL and CSA certified. We design and test our products to meet EN50155.

Renewable Energy

As the world transitions from fossil fuels to renewable energy, the demand for efficient, cost-effective, and highly reliable power conversion technologies is growing rapidly. Electrohm's supports this global energy transformation by offering a wide range of certified current and voltage sensors tailored for **Solar, Wind, and Hydro** applications — compliant with **UL, CSA, and CE standards**.



Central & Off-Grid Inverters

Electrohms offers a wide range of open and closed loop hall effect current sensors **upto 3000A** and voltage sensors for measurement upto **4KV** for high power **MW-class central inverters** and **off-grid inverters**. These sensors are used in global installation and meet international safety qualification such as **UL, CSA** and **CE**. Electrohm's also offers a range of cost-effective sensors for solar **string monitoring** towards improving plant optimisation.

Converters For Wind Energy

The converter is a crucial component in wind turbines, directly impacting turbine output and generator performance. Electrohm's current and voltage sensors deliver the **high reliability** and **precision** needed for converters to optimize turbine control schemes and maximize energy yield. Electrohm's current and voltage sensors are trusted in these applications.

Current Sensors

Electrohms offer open loop, closed loop current sensors using Hall-effect technology with a measuring range upto 3000A rms supplied in a range of electrical and mechanical options. Electrohms also offers leakage current sensors (**FLA Series**) for residual current detection in residential & commercial solar applications.



KEY FEATURES

ELECTRICAL

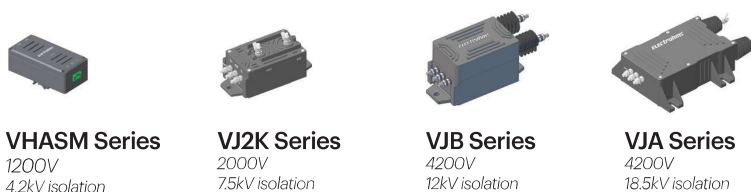
- Current & voltage output
- Measurement range **upto 2500A rms.**
- Low temperature drift
- High bandwidth **upto 150kHz**
- Superior dynamic response in closed & select open-loop models
- Wide dynamic response (flux-gate sensor models)
- Low offset values

MECHANICAL

- PCB & Flang Mount designs
- Fully encapsulated structures
- Bus-bar locators available for many designs
- Multiple output connector options — stud; connector; cable
- Horizontal & vertical mounting flexibility

Voltage Sensors

Electrohms offers voltage sensors using Hall-Effect technology & optical isolation technology with a range upto 4.2KV rms supplied in a variety of electrical & mechanical options.



KEY FEATURES

ELECTRICAL

- DC, AC and pulse voltage measurements with galvanic isolation
- High accuracy & excellent linearity
- Zero insertion loss
- Low temperature drift
- High bandwidth
- Fast response time

MECHANICAL

- Fully encapsulated structures
- Multiple output connector options — **stud; connector**

All our product are CE, ROHS, REACH compliant. Several models are UL and CSA certified. We design and test our products to meet EN50178 and RCD products as per IEC 62752

Industrial

Industrial equipment requires highly-reliable and accurate sensors and transducers to control, regulate and protect the heart of power electronics systems. Electrohm's current and voltage sensors play a critical role in building smarter equipment for UPS, drives, welding, and automation.



AC/DC Drive

Motor drives are categorized mainly by the type of motor they control (AC, DC, BLDC, stepper, or servo motors) and the specific control method (scalar control, vector control, direct torque control, etc). Electrohm's offers a range of current sensors technologies **Hall-effect, Flux gate, open loop and closed loop technologies** based on the application requirement. Electrohm's sensors are employed in a range of high power drive application in mission critical applications.

Motor Protection Control & Relay

Motor protection and monitoring is essential for all industrial installations to work properly with **adequate safety for machines and personnel**. Electrohm's offers a range of current transformers for **relay protection AC circuits, current sensor for DC circuits and split sensors of monitoring**.

Inverters & UPS

In many applications, UPS play a mission-critical role where loss of power is not an option. Current sensor play a key role in controlling output current accurately to ensure efficiency, protecting IGBT's and managing charging and discharging cycles to ensure long battery life. **Electrohms current sensors are used in a range of topologies in medium and high power UPS power electronics.**

IGBT Welding Rectifiers

Current sensors are used in welding applications to provide a current proportional to the output signal to the PWM driver and feedback control loop. **Electrohms current sensors are highly reliable and accurate and used in a range IGBT power supplies for welding equipment.**

AC/DC Current Sensors (Low & Medium Voltage)

Electrohms offers a range of current sensors for AC/DC measurement, based on open-loop and closed loop hall-effect technology to serve a wide range of demanding industrial power electronics applications. Sensors with UL, CSA and IECX certifications are available.



HL Series
15A



HS Series
50A



HE055T01
50A



HSS Series
200A



HE300T04
300A



HSM Series
500A



HE500
500A



HE1K Series
1000A

KEY FEATURES

ELECTRICAL

- Open loop and closed loop technology
- Measurement range upto **3000 Arms**
- High accuracy and linearity
- Low temperature drift
- High bandwidth **upto 150kHz**
- Superior dynamic response in closed & select open-loop models
- Low offset values

MECHANICAL

- PCB & flange-mount designs
- Fully encapsulated structures
- Range of output connector types
- Horizontal and vertical mounting options

AC Voltage & Current Transformers

Electrohms has a wide range of current transformer for measuring mA in relay applications to kA in a range of precision measurement applications. Electrohms precision current sensors range for energy metering and monitoring applications offers a range of sensors for metering accuracy class from 0.1 to class 2 applications with current levels measuring upto 1500A. Electrohms also offer custom resin cast current transformers for 4000/5A applications.



CT1248
10A



CT1267
40A



CT1164
60A



CT1216
300A



CT1392
300A



ST1370
300A



ST1383
300A



ST1409
300A

KEY FEATURES

ELECTRICAL

- AC solid core current transformers for metering accuracy upto Class **0.2 and 300A**
- AC solid core current transformers for relay applications for **50mA to 5A**
- Custom AC current transformers for Class-1 **upto 4000/5A** resin cast
- AC Voltage transformer with Class-1 accuracy for measurement **upto 230V and 4.5kV** isolation
- Extended measuring range in the same package
- Good accuracy at nominal current

MECHANICAL

- Multiple packaging types in solid & split-core designs
- PCB and flange-mountable designs
- Fully-encapsulated structures
- Lead-wire output

All our products are CE, ROHS, REACH compliant. Several models are UL and CSA certified. We design and test our products to meet EN50178.

Automotive

With a global experience in high reliability markets like railway traction and wind convertor drives requiring highest MTBF's, Electrohm's range of current and voltage sensors are well suited for automotive xEV traction and on-board battery charging applications. Electrohm's offers a wide range of current sensors for motor control, protection and BMS applications targeting high power traction inverters for xEV passenger cars and buses, low power inverters for EV motorcycles and small cargo vehicles. A choice of standard products as well as customized options are available in a range of technologies including hall-effect, GMR and Flux gate suited for the application.



Traction Inverters

Traction inverters are key components in electric vehicles (EVs) and are primarily used in the powertrain of electric and hybrid electric vehicles. These inverters are responsible for converting the direct current (DC) from the battery into alternating current (AC) to drive the electric traction motor, which propels the vehicle. Electrohm's offer open loop as well as closed loop sensor technologies with high accuracy upto 0.5% and upto 1000A measurement range.

Two-Wheeler Motor Control

Electrohm's offer a range of cost effective, open loop sensors for high volume two wheeler applications. Designed to meet stringent environmental and operating conditions, Electrohm's sensors are designed to cater to wide range of motor controller offering. Open loop sensor with accuracy upto 1% and current measurement range upto 1000A are available in range of mechanical mounting with non-intrusive designs with high isolation as well as bus bar designs.

Onboard Charging & Battery Management System

DC current sensors are integral to the Battery Management System (BMS) in EVs. The BMS relies on current sensors to monitor the charge and discharge currents of the battery, ensuring that the current is within safe limits and the battery is not overcharged or over-discharged leading to thermal runaway situations. Monitoring state-of-charge (SOC) and state-of-health (SOH) of the battery is critical to ensure long battery life. Electrohm's offers a range of technologies including hall effect, flux gate and GMR technologies to meet application goals reliably.

Current Sensors (Traction Inverters)

Electrohms offer open loop, closed loop current sensors using Hall-effect technology with a measuring range upto 2000A rms supplied in a range of electrical and mechanical options.



HEAB500
200-1500A



HLE Series
200A



HLB Series
200A



HEF300T03
300A



HEV Series
400A



HE500 Series
500A



HEA1K Series
1000A

KEY FEATURES

ELECTRICAL

- Current and voltage output
- Measurement range upto 1000A rms.
- Excellent accuracy and linearity
- Low temperature drifts.
- High bandwidth upto 150kHz
- Low offsets

MECHANICAL

- Fully encapsulated designs
- Range of automotive compliant connector types
- Horizontal and vertical mounting options

Current Sensors for Battery Systems

Electrohms DC current sensors are vital in ensuring the safety, efficiency, and accuracy of fast charging systems. They are used throughout the charging process, including power electronics controls and monitoring the current flowing into the EV's battery to ensuring proper current regulation, protection from overcurrent, and optimizing the system's performance. Electrohms offer open loop, closed loop DC current sensors using Hall-effect, Flux-gate and GMR technology with a measuring range upto 1500A rms supplied in a range of electrical and mechanical options used in type 2 AC chargers and DC fast chargers.



HLG050T02
50/320A



FGB500T01
1500A

KEY FEATURES

ELECTRICAL

- Open-loop technology
- Excellent accuracy and linearity
- Zero insertion loss
- Low temperature drift
- Dual current types available

MECHANICAL

- Fully encapsulated designs
- Range of output connector types

All our product are CE, ROHS, REACH compliant. Several models are UL and CSA certified. We design and test our products to meet EN50178 and ISO26262.

IoT & Smart Monitoring

Electrohms offers a variety of AC current sensing solutions for measurement of existing installations for metering and monitoring applications. Our wide range of solid core and split core sensors are suitable for applications upto **4000A**, AC. For DC applications we also offer a wide range panel mountable and split core sensors upto 1500A DC. We offer instantaneous and conditioned output options in some designs. **Our strength lies in offering custom designs for your unique requirements.**



Battery Monitoring

For 24X7 critical battery monitoring applications Electrohms offers a range of PCB, Bus Bar mounted and split core current sensors with high reliability and accuracy. Our split core sensors are useful in existing installations and **can measure currents upto 100A**. We also offer a range of standard open and close sensors **upto 3000A DC**. Electrohms also offers custom designs for your unique monitoring projects. We have a proven track record in Data Center, Railways, Utility and Telecom applications.

Smart Metering

Electrohms has a long history of new product development of current transformer for **IEC/ANSI meters**. Our sensors support accuracies **upto 0.1 class for current range mA to 300A with excellent reliability and UL/ROHS compliances**. We also offer a range of DC tolerant solutions and self-powered CT's to power tamper-proofing circuitry.

Industrial 4.0

As the world moves towards smart factories and buildings, Electrohms is the obvious choice for monitoring all types of assets that consume electricity by capturing electrical information our sensors help you build reliable and useful analytic solutions to **optimize asset utilisation and predictive maintenance**. Our range of split CTs and hall sensors, voltage sensors and isolation transformer along with customized solutions make Electrohms the obvious choice for your new and existing designs. We can also offer hardware modules to convert analog outputs to IP compatible data.

DC Current Sensors

Electrohms offer a range of hall-effect based split sensors for AC and DC monitoring used in a variety of Industry 4.0 applications.



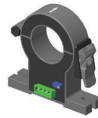
HJB Series
1500A



HL Series
600A



HJ series
600A



HJ Series
1000A

KEY FEATURES

ELECTRICAL

- DC current measurements with **galvanic isolation upto 1500A**
- Single & dual-supply operation
- Instantaneous and (**4-20mA and 5V**) conditioned output options
- Extended measuring range in the same package
- Single and dual supply operation
- Good accuracy at nominal current
- Protection from miswiring in any combination

MECHANICAL

- Multiple packing types in solid and split designs
- PCB mountable and flange-mount designs
- Fully encapsulated structures
- Range of output connector types and integrated cable output
- Hinge-locking without screws for easy mounting

AC Split-Core Current Transformers

Electrohms offer a range of hall-effect based split sensors for AC and DC monitoring used in a variety of Industry 4.0 applications.



ST1409 Series
10-80A



ST1361 Series
10-80A



ST1370 Series
100-1000A

KEY FEATURES

ELECTRICAL

- AC split core transformers for Class 1 **upto 1500A**
- Extended measuring range in the same package
- Good accuracy at nominal current

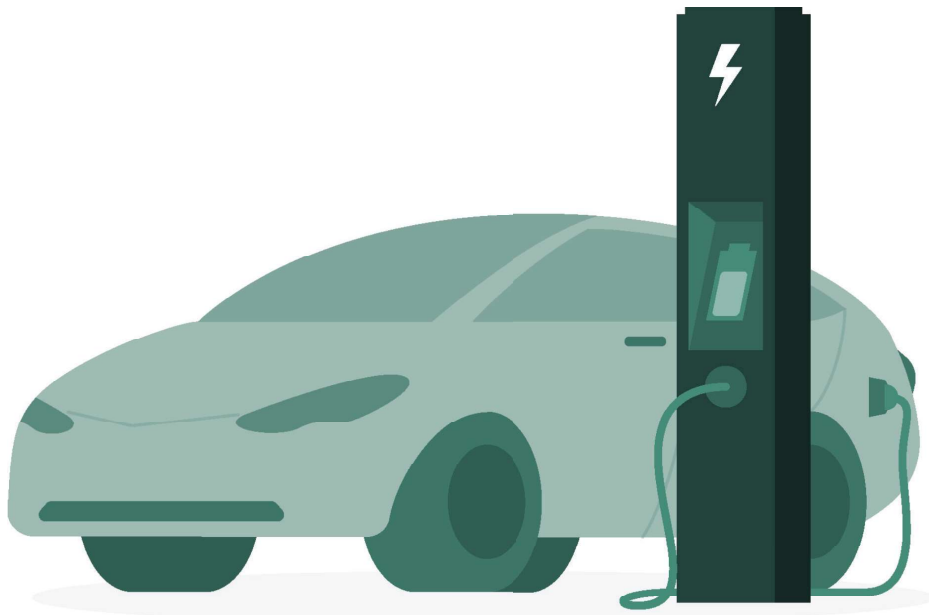
MECHANICAL

- Multiple packing types in solid in solid & split designs
- PCB mountable and Flange Mount designs
- Fully encapsulated
- Flange mount and lead-wire output
- Hinge locking without screws for easy mounting

All our product are CE, ROHS, REACH compliant. Several models are UL and CSA certified. We design and test our products to meet EN50178.

EV Charging

Electrohms has a proven track record for residential and fast EV charging applications in India. Electrohms manufacture a range of AC and DC current sensors and voltage sensors. With a strong product portfolio in high power systems, Electrohms sensors are well suited for Ultra Fast chargers. Electrohms also offer sensors for **leakage current detection** and highly accurate energy measurement.



AC Wall Charging

Electrohms offers a range of current sensors, **leakage current sensors (RCD)** for safety and current transformers for energy measurement for wall-mount AC chargers used in single-phase and 3-phase systems. All sensors and transformers are designed to work in harsh environments and meet relevant **IEC and UL safety standards**.

DC Fast Charging

Electrohms offers a range of sensors to accurately measure the DC currents upto **2000A** and voltage upto **2250V DC** for fast chargers that support **400V, 800V** and upcoming **920V systems**. Our sensors are used for control, DC energy measurement charges sharing and fault monitoring applications. All the sensors are designed to work in harsh environments and meet IEC and UL safety standards. AC EV wall charging All sensors are designed to work in harsh environments and meet relevant application and safety standarads as per **IEC and UL safety standards**.

Current Sensors

Electrohms DC current sensors are vital in ensuring the safety, efficiency, and accuracy of fast charging systems. They are used throughout the charging process, including power electronics controls and monitoring the current flowing into the EV's battery to ensure proper current regulation, protection from overcurrent, and system performance optimization. Electrohms offer open loop, closed loop DC current sensors using Hall-effect technology with a measuring range upto 2000A rms supplied in a range of electrical and mechanical options used in type-2 AC chargers and DC fast-chargers.



HEF300T03
300A



HE500T05
500A



HE1K Series
1000A



HE2k0T02-CB10
2000A



HE2k0T03-CB00
2000A

KEY FEATURES

ELECTRICAL

- Current and voltage output
- Measurement range upto **2000A rms**
- High accuracy and linearity
- Low temperature drift
- High bandwidth **upto 150kHz**
- Low offset value

MECHANICAL

- Fully encapsulated structures
- Bus-bar locators available for many designs
- Multiple output connector options — **stud; connector; cable**
- Horizontal & vertical mounting flexibility

Leakage Current Sensors

Leakage current sensors are used for human safety and protection in EV charger applications for residual current monitoring protection circuits. Electrohms offer sensors design in accordance with IEC 62752 with full RCD functionality for 6mA DC & 30mA AC leakage-protection. Electrohms sensors have low drift and deliver reliable performance over the temperature operating range with <0.2 mA resolution.



FLA Series

KEY FEATURES

ELECTRICAL

- Open-loop technology
- Residual current detection
- Residual current resolution **< 0.2 mA**
- Analog/digital (I2C) output for current monitoring
- Current monitoring range **±300 mA**
- Integrated self-monitoring and test functions
- High immunity to external interferences

MECHANICAL

- PCB-mountable
- Comprises of AECQ-qualified components
- RoHS compliant
- **Outer case complaint to UL94-V0**

Precision AC Current Transformers

Electrohms offers a wide range of current transformers with measurement upto 200A and accuracy better than 0.2% with low phase shift for accurate energy metering functionality.



CT1164
60A



CT1267
40A



CT1216
300A

KEY FEATURES

ELECTRICAL

- AC solid core current transformers for metering accuracy upto Class **0.2 and 300A**
- Extended measuring range in the same package
- Good accuracy at nominal current

MECHANICAL

- Fully-encapsulated structures
- PCB-mountable & fly lead

Voltage Sensors

DC voltage sensors are critical components in DC fast chargers, ensuring safe, efficient, and accurate charging operations. They are employed to monitor the voltage from the power source, regulate voltage during charging, protect the vehicle's battery from overcharging, and provide essential diagnostics. Electrohms offers a range of voltage sensor technologies including Hall Effect and Optical isolation based.



VHASM Series
1500V



VH Series
1500V

KEY FEATURES

ELECTRICAL

- Current & Voltage output isolation upto **4.2KV**
- High accuracy & linearity
- Low temperature drift
- Low offset levels

MECHANICAL

- Fully encapsulated rugged designs for outdoor applications
- Range of output connector types
- Enclosed and Bare PC versions with input divider network

All our products are CE, ROHS, REACH compliant. Several models are UL and CSA certified. We design and test our products to meet EN50178 and RCD products as per IEC 62752.

CLOSED LOOP CURRENT SENSORS

Series (Package style)		Family	Nominal current (A)	Output	Supply Voltage (V)	Output Termination	Primary Conductor opening (mm)	Standard
HA		HA025T01	25	+2.5 ± 0.625V	+5.0	Pins	13x7.15	EN50178
HE		HE055T01	50	50mA	±12 - ±15	Pins	13x7.15	EN50178, UL 508
		HE100T01	100	50mA	±12 - ±15	Pins	13x7.15	EN50178
		HEF300T03	300	120mA	±24	Connector header, B3P-VH(LF)(SN), JST Mfg. Co. Ltd.	φ 25	EN50178
		HEJ300T04-CB03	300	150mA	±20	Connector header, Micro-Fit+ 206832, Molex	10 X 20.10	EN50178, UL508*
		HE050...300T04	50 - 300	25 ... 150 mA	±12 - ±15	Faston Tab 6.3x0.8mm	φ 25	EN50178
HE500		HE500T02-CB00	500	100mA	±15 - ±24	Connector header, Molex	φ 31.80	EN50178
		HE500T05-CB00	500	100mA	±15 - ±24	JST B3P-VH series 3 pin header	φ 31.80	EN50178
		HE500T07	500	100mA	±15 - ±24	Molex Minifit jr 5566 series	φ 31.80	EN50178
		HE500T08	500	142.8 mA	±15 - ±24	Flylead	φ 30.20	EN50178
		HE500T21-CB01	500	125 mA	±15 - ±24	Mini-Fit Jr 5566, Molex	φ 31.80	EN50178
HE1K		HE1K0T04-CB00	1000	200 mA	±15 - ±24	Mini-Fit Jr 5566, Molex.	φ 40.50	EN50178
		HE1K0T05-CB00	1000	200 mA	±15 - ±24	BH3P-VH-1(LF)(SN), JST Mfg.Co.Ltd	φ 40.50	EN50178
		HE1K0T21-CB00	1000	200 mA	±15 - ±24	Mini-Fit Jr 5566, Molex	φ 40.50	EN50178
HE2K		HE2K0T01-CB10	2000	400mA	±15 - ±24	M5 screw studs	φ 60.5	EN50178
		HE2K0T02-CB00	2000	400mA	±15 - ±24	block Header, Phoenix contact	φ 60.5	EN50178
		HE2K0T02-CB10	2000	500mA	±15 - ±24	Phoenix contact header, MCV series 3pin	φ 60.5	EN50178
		HE2K0T03	2000	500mA	±15 - ±24	M5 screw studs (side termination)	φ 60.5	EN50178
		HE2K0T03-CB00	2000	500mA	±15 - ±24	M5 Studs & Faston tab, TE Connectivity AMP connectors	φ 60.5	EN50178
		HE2K0T04	2000	400mA	±15 - ±24	M5 screw studs (side termination)	φ 60.5	EN50178
		HE2K0T04-CB00	2000	400mA	±15 - ±24	B3P-VH(LF)(SN), JST Mfg.Co.Ltd	φ 60.5	EN50178
HEA		HEA1K0T06-CB02	1188	395 mA	±24	block Header, Phoenix contact	φ 43	EN50178, UL508*
		HEA1K0T05-CB00	1000	200 mA	±15 - ±24	Connector header, part no- BH3P-VH-1(LF)(SN), JST Mfg.Co.Ltd.	φ 43	EN50178, UL508*
		HEAA1K0T07-CB00	1000	200 mA	±12 - ±24	D-SUB Connector 9-Pin, 2 row Female with screw lock UNC 4 - 40	φ 42.50	EN50178, UL508*
		HEA1K0T21-CB00	1000	200 mA	±15 - ±24	Connector header, Mini-Fit Jr 5566, Molex	φ 43	EN50178, UL508*, EN50155

CLOSED LOOP CURRENT SENSORS

Series (Package style)		Family	Nominal current (A)	Output	Supply Voltage (V)	Output Termination	Primary Conductor opening (mm)	Standard
HEAB		HEAB500T01	500	143 mA	15 - ±24	M4 Studs	Φ 32	EN50178, EN50155
		HEAB500T10	500	143 mA	15 - ±24	SMS6GE6 Burndy connector	Φ 32	EN50178, EN50155
HED		HED500T01	500	100mA	±15 - ±24	M5 screw studs	Φ 42.0	EN50178, EN50155
		HED1K0T01	1000	200mA	±15 - ±24	M5 screw studs	Φ 42.0	EN50178, EN50155
		HED1K0T01-CB11	1000	250mA	15 - ±24	M5 screw studs	Φ 42.0	EN50178, EN50155
		HED1K3T01	1300	325mA	15 - ±24	M5 screw studs	Φ 42.0	EN50178, EN50155
		HED1K0T02	1000	200mA	15 - ±24	M5 screw studs	Φ 42.0	EN50178, EN50155
		HED1K0T02-CB11	1000	250mA	15 - ±24	M5 screw studs	Φ 42.0	EN50178, EN50155
		HED1K0T04-CB12	1000	200mA	15 - ±24	SUB-D TRAC Gimota connector	Φ 42.0	EN50178, EN50155
		HED1K3T01-CB10	1300	325mA	15 - ±24	CPC 11 series, AMP	Φ 42.0	EN50178, EN50155
		HED1K3T01-CB11	1300	325mA	21 - ±24.1	M5 studs.	Φ 42.0	EN50178, EN50155
		HED1K3T02	1300	325mA	15 - ±24	M5 Studs & Faston tab, TE Connectivity AMP connectors.	Φ 42.0	EN50178, EN50155
		HED1K3T02-CB11	1300	325mA	21 - ±24.1	M5 Studs & Faston tab, TE Connectivity AMP connectors.	Φ 42.0	EN50178, EN50155
HEM		HEM2K0T01-CB00	2000	400mA	15 - ±24	"Connector header, TE Connectivity AMP Connectors."	Φ 63.50	EN50178, EN50155
HER		HER1K0T03	1000	200mA	15 - ±24	CPC 13 series, AMP	Φ 42.0	EN50178, EN50155
		HER1K3T01-CB10	1300	325mA	15 - ±24	CPC 11 series, AMP (side mounted)	Φ 42.0	EN50178, EN50155
		HER1K3T02-CB10	1300	325mA	15 - ±24	M5 screw studs	Φ 42.0	EN50178, EN50155
HEV		HEV400T01	400	133.33 mA	±15	Flylead	13 X 30	EN50178, EN50155
		HEV400T02	400	80 mA	±15	Connector header, part no.: - 70543-0003, Molex	13.50 X 30.50	EN50178, EN50155
		HEV500T03-CB12	400	250 mA	±15	Connector header, part no-22-04-1041, Molex	13 X 30	EN50178, EN50155
HEP		HEP3K0T01	3000	600 mA	±24	M5 screw studs	Φ 102.0	EN50178

All products are CE, ROHS, and REACH compliant.

UL508* : UL Certification is under process.

OPEN LOOP CURRENT SENSORS

Series (Package style)	Family	Nominal current (A)	Output	Supply Voltage (V)	Output Termination	Primary Conductor opening (mm)	Standard
HLH 	HLH025T01	25	Voff ± 0.625 V	+5.0	PIN	ϕ 5.7	EN50178
HLG 	HLG050T02-DS	50, 320	Voff +2.0, Voff +1.664	+5.0	Connector housing, Part no 1-1456426-5, TE connectivity	ϕ 22.50	ISO 26262
HL 	HL050...600T05-CB11	50- 600	Voff +2.0	+5.0	Connector header, part no-22-04-1041, Molex	20.4x10 .40	EN50178
	HL050...600T05-CB10	50- 600	Voff ± 0.625 V	+5.0	Connector header, part no-22-04-1041, Molex	20.4x10 .40	EN50178
HLE 	HLE200T01	200	Voff ± 1.0 V	+5.0	PIN	ϕ 16	ISO 26262
	HLE450T01	450	Voff ± 1.0 V	+5.0	PIN	ϕ 16	ISO 26262
HLB 	HLB200T01	200	Voff +2.0 V	+5.0	Connector header, part no-22-04-1041, Molex	ϕ 12.50	ISO 26262
	HLB600T01	600	Voff +2.0 V	+5.0	Connector header, part no-22-04-1041, Molex	ϕ 12.50	ISO 26262
	HLB800T01	800	Voff +2.0 V	+5.0	Connector header, part no-22-04-1041, Molex	ϕ 12.50	ISO 26262
HS 	HS050...600T01	50- 600	4.0V	± 15.0	Panel Mountable	20.5x10	UL 508 *
	HS050...600T10	50- 600	4.0V	± 15.0	Flylead wire 350 mm	20.5x10	UL 508 *
HSS 	HSS200...1K5T01	200 - 1500	4.0V	± 15.0	Molex 5045 series, 4pin	40.5x30.5	UL 508
HSM 	HSM500...2K5T01	500 - 2500	4.0V	± 15.0	Molex 5045 series, 4pin	64.0x21.0	UL 508 *
	HSM500...2K5T02	500 - 2500	4.0V	± 15.0	Connector header, Part no- 1881574, Phoenix Contact	64.0x21.0	EN50178, UL 508 *
FLA 	FLA1KOT01	1	Voff ± 2.0 V	5.0 V	PCB mountable	ϕ 12.60	IEC62752
	FLA300T01- LK	6mA DC/30mA AC	Digital output	5.0 V	PCB mountable	ϕ 12.60	IEC62752
	FLA3E3T01	3	Voff ± 0.625 V	5.0 V	PCB mountable	ϕ 12.60	IEC62752

All products are CE, ROHS, and REACH compliant.

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SPLIT CORE CURRENT SENSORS

Series (Package style)		Family	Nominal current (A)	Output	Supply Voltage (V)	Output Termination	Primary Conductor opening (mm)	Mounting	Standard
HJ		HJ050...500T09	50 - 500	+2.5 ± 1V	+5.0	Phoenix contact header, BCH350V series 4pin	Φ 20	Flange	EN50178
		HJ050...200T02	50 - 200	+2.5 ± 1V	+5.0	Molex 5045 series, 4pin	Φ 20	Flange	EN50178
		HJ300...500T02-CB10	200 - 500	+2.5 ± 1V	+5.0	Molex 5045 series, 4pin	Φ 20	Flange	EN50178
		HJ100...1K0T08-CS1	100...1000	4-20mA	12	Connector header, part no- 1755752, Phoenix Contact	Φ 40.5	Flange	EN50178
HK		HK050...500T03	50 - 500	4.0V	±12 - ±15	Molex 5045 series, 4pin	Φ 20	Flange	EN50178
		HK050...500T09	50 - 500	4.0V	±12 - ±15	Phoenix contact header, BCH350V series 4pin	Φ 20	Flange	EN50178
		HK100...2K0T04	100 - 2000	4.0V	±15.0	Phoenix contact header, BCH350V series 4pin	Φ 40.5	Flange	EN50178
HJB		HJB1K5T01	1500A	2.5±1.5 V	9.0 - 18.0	Connector header, part no- 1755752, Phoenix Contact	Φ 50	Mounting flange available on request	EN50178
		HJB1K0...1K5T01-CS1	1000...1500A	4-20mA	+24V	Connector header, part no- 1755752, Phoenix Contact	Φ 50	Mounting flange available on request	EN50178
HJB (ATEX)		HJB1K5T01 -CS1	1500A	4-20mA	+24V	Connector header, part no- 1755752, Phoenix Contact	Φ 50	Mounting flange available on request	IEC 60079-11, IEC 60079-0, ISO 80079-34
HJ (ATEX)		HJ050...1K0T08-CS2	50...1000	4-20mA	+24V	Connector header, Phoenix Contact	Φ 40.5	Flange	IEC 60079-11, IEC 60079-0, ISO 80079-34

All products are CE, ROHS, and REACH compliant.

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VOLTAGE SENSORS

Series (Package style)		Family	Input (Vrms)	Output	Supply Voltage (V)	Isolation Voltage (kV)	Mounting	Standard
VH		VH1KOT01	1000V	25mA	±15V	4.2	PCB	EN50178
VHASM		VHASM150T01	150V	25mA	±15V	4.2	Flange	EN50178
		VHASM600T01	600V	25mA	±15V	4.2	Flange	EN50178
		VHASM750T02	750V	20mA	±15V	4.2	Flange	EN50178
		VHASM1KOT01	1000V	25mA	±15V	4.2	Flange	EN50178
		VHASM1K2T02	1200V	20mA	±15V	4.2	Flange	EN50178
VJ		VJ250T03-CB00	250V	50mA	±15V - ±24V	7.5	Flange	UL508, EN50178, EN50155
		VJ500T03-CB00	500V	50mA	±15V - ±24V	7.5	Flange	UL508, EN50178, EN50155
		VJ750T03-CB00	750V	50mA	±15V - ±24V	7.5	Flange	UL508, EN50178, EN50155
		VJ1K0T03-CB00	1000V	50mA	±15V - ±24V	7.5	Flange	UL508, EN50178, EN50155
		VJ1K5T03-CB00	1500V	50mA	±15V - ±24V	7.5	Flange	UL508, EN50178, EN50155
		VJ2K0T03-CB00	2000V	50mA	±15V - ±24V	7.5	Flange	UL508, EN50178, EN50155
VJA		VJA4K2T01	4200V	50mA	±15V - ±24V	18.5	Flange	EN50178, EN50155
VJB		VJB4K2T01	4200V	50mA	±15V - ±24V	12	Flange	EN50178, EN50155

All products are CE, ROHS, and REACH compliant.

UL508* : UL Certification is under process.

CURRENT & VOLTAGE TRANSFORMERS

Current Transformers suitable for Measurement of AC current with galvanic isolation. These current transformer have High accuracy , with low ratio and phase error. Available in different mounting type and various sizes. DC immunity as per IEC62053-21/1S1377g. Applications like energy metering, rail, mining, offshore windmills, power control, Ups inverters, compact drive solutions and many more.

Energy metering

High Accuracy Current Transformers for whole current measurements in energy metering.

Product Code	IP(Arms)	Pri.Opening (ID) in mm	Turns Ratio	Rb (Ohms)	DCR (Ohms)	AE (%)	PE (Deg)	Secondary Termination
CT1248-A2-RC	0.05-10	5	1:1500	75	45-60	0.2	0.5	PCB
CT1343-RC	0.10-15	5	1:2000	20	175-222	0.1	0.25	PCB
CT1052-A1-RC	0.25-20	6.3	1:2500	90	120-145	0.5	0.5	PCB
CT1176-RC	0.25-20	6.3	1:2500	90	98-120	0.5	0.5	PCB
CT1231-A1-RC	0.25-30	6.3	1:2500	30	132-168	0.3	1.0	PCB
CT1232-A1-RC	0.25-30	6.3	1:2500	30	132-168	0.3	1.0	Fly Lead
CT1267-A1-RC	0.25-40	7	1:2500	30	86-105	0.1	0.25	PCB
CT1316-RC	0.25-40	6.3	1:2500	100	104-136	0.1	0.25	PCB
CT1164-A1-RC	0.25-60	9	1:2500	37.5	59-72	0.1	0.2	PCB
CT1295-A1-RC	0.25-60	9	1:2500	37.5	59-72	0.1	0.2	Fly Lead
CT1365-RC	0.25-60	9	1:1000	8.5	11.5 – 14.1	0.1	0.2	PCB
CT1396-RC	0.25-60	9	1:2500	12.5	72 Typical	0.1	0.1	PCB
CT1273-A1-RC	1-100	11.5	1:2500	7.5	37-47	0.1	0.2	PCB
CT1275-A1-RC	1-100	11.5	1:2500	7.5	37-47	0.1	0.2	Fly Lead
CT1216-A1-RC	1-300	19.3	1:2000	6.8	<21	0.1	0.1	Fly Lead

Protection & Control

Protection and control of industrial equipment like AC drives, UPS/inverters, current monitoring modules and allied equipment require current transformers for sensing currents

Product Code	IP(Arms)	Pri.Opening (ID) in mm	Turns Ratio	Rb (Ohms)	DCR (Ohms)	AE (%)	Secondary Termination
CT1317-RC	0.05	9	1:645	10k	38-46	---	PCB
CT1337-RC	0.030-0.30	6.3	1:500	100	13.2-17.3	---	PCB
CT1270-RC	0.05-5	5	1:700	10	24-30	1.5	PCB
CT1401-RC	1-20	6.3	1:800	10	34.2 – 41.8	2.0	PCB
CT1202-RC	1-40	9	1:1000	100	36–46	---	Fly Lead
CT1292-B1-RC	1-100	19.3	1:1800	12	40-50	1.5	Fly Lead
CT1278-P1-RC	5-60	6.3	1:4000	392	219-279	3.0	PCB
CT1363-RC	5-60	9	1:4000	392	239 - 305	3.0	PCB
CT1333-RC	5-120	12	1:4000	300	162-198	3.0	PCB
CT1405-RC	5-100	25	1:1000	6.8	9.9-12.1	2.0	Fly Lead
CT1392-RC	50-2000	Busbar type	1:400	2	0.35 Typical	1.0	M4 Studs
CT1393-RC	90-3500	Busbar type	1:700	2	0.65 Typical	1.0	M4 Studs

AC SPLIT CORE CURRENT TRANSFORMER

Split Core Current Transformer are designed for fast and easy installation without disconnecting cable or bus-bar circuits. These sensors are compact in size and ideal for installation on existing cable. Applications in energy monitoring, IoT solutions, Industrial automation, etc.

Product Code	IP(Arms)	Pri.Opening (ID) in mm	Output Signal	AE (%)	Operating Temperature	Dielectric strength (KVrms)	Secondary Termination
ST1361-V33310...80	10...80	9 mm	0.333V	1.0	-10...+70 Deg C	2.5	Fly Lead
ST1370-V333100...1000	100...1K0	40 mm	0.333V	1.0	-10...+70 Deg C	3.0	Fly Lead
ST1383-V333500...1K5	500...1K5	50 mm	0.333V	1.0	-10...+70 Deg C	3.0	Fly Lead
ST1409-V333050...300	50...300	20 mm	0.333V	1.0	-10...+70 Deg C	2.5	Fly Lead
ST1410-C050050	50	20 mm	50 mA	1.0	-10...+70 Deg C	2.5	Fly Lead

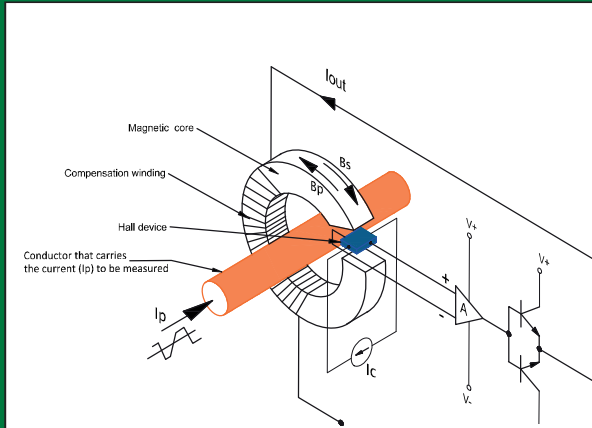
VOLTAGE MEASUREMENT & ISOLATION TRANSFORMER

Voltage transformers (VT), also known as potential transformers (PT), are used for metering and protection applications for measurement of AC voltages with galvanic isolation. These transformers are accurate and provide output voltage proportionate to the input voltage for control electronics with high fidelity. They are designed to present negligible load to the source being measured.

Product No	Nominal Input (Vpn)	Output @ Vpn	Burden Resistance	Turns Ratio	Dielectric Strength (KVrms)	Temp. Operating	Secondary Termination
VT1090-RC	110*	4.3	2K	1:1	4.0	-40...+85 Deg C	PCB
VT1329	110	2.3	3.3K	47:1	4.0	-10...+60 Deg C	PCB
VT1211-RC	5	5	---	1:1	2.5	-10...+60 Deg C	PCB

* Voltage input with resistance $R1=R2=22K$ Ohms

CLOSED LOOP HALL EFFECT TECHNOLOGY



B_p	Magnetic flux by the input current
B_s	Magnetic flux by the output current
A	Amplifiers and signal conditioning to drive the output current
I_{out}	Output current which is proportional in the input current I_p
I_p	Conductor that carries the current (I_p) to be measured

Compared to the open loop sensors, closed loop current sensors have a compensation winding on the core that dramatically improves performance. The closed loop transducers use the Hall generator voltage to create a compensation current in the secondary coil to create a magnetic flux which is equal to and in the opposite direction of flux generated by the input current as measured by the Hall generator. In other words, the secondary current, I_{out} , creates a flux equal in amplitude, but opposite in direction, to the flux created by the primary current and thus the total flux in the core gap is always being nulled to zero.

Operating the Hall generator in a zero flux condition eliminates the drift of gain with temperature. An additional advantage to this configuration is that the secondary winding will act as a current transformer at higher frequencies, significantly extending the bandwidth and reducing the response time of the transducer. When the magnetic flux is fully compensated (zero), the magnetic potential (ampere-turns) of the two coils are identical. Hence: $NP \cdot IP = NS \cdot IS$ which can also be written as $IS = IP \cdot NP / NS$. Consequently, the secondary current, I_{out} , is the exact image of the primary current, IP , being measured. Inserting a "burden resistor", R_b , in series with the secondary coil (see fig.) creates an output voltage V_{out} that is an exact image of the measured current I_p .

Electrical Features

- Wide frequency range
- Good overall accuracy
- Fast response time
- Low temperature drift
- Excellent linearity
- No insertion losses

Advantages

- Galvanic isolation between the primary and secondary circuits
- Measurement of all waveforms is possible: direct current, alternating current, impulse, etc.
- High accuracy over a large frequency range (from direct current to 100 kHz)
- Excellent dynamic performance
- High overload capability
- High reliability

Mechanical features

- A wide range of primary current apertures
- PCB mounted, or panel mounted
- Panel mounting with both horizontal and vertical Positions.
- Compact packages

Applications

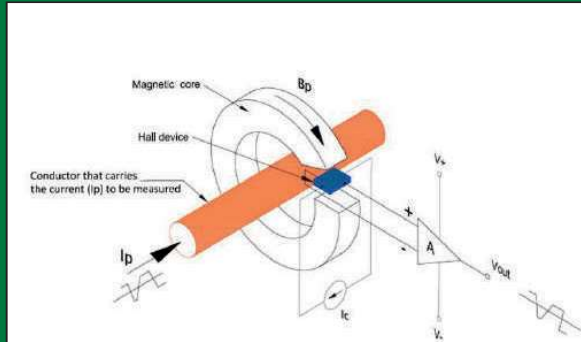
Industrial :

Variable speed drives, Uninterruptible Power Supplies (UPS), Active harmonic filters, Battery chargers, Wind generators, Solar inverters, etc.

Railway :

Main converters, Auxiliary converters (lighting, air conditioning), Battery chargers, Choppers

OPEN LOOP HALL EFFECT TECHNOLOGY



B _p	Magnetic flux by the input current concentrated by the core
A	Amplifiers and signal conditioning to drive the output voltage
V _{out}	Output voltage which is proportional to the input current I_p

Principle

Open loop current sensors measure direct, alternating and impulse currents, with galvanic isolation between the primary and secondary circuits

The primary current flowing in the sensor creates a proportional primary magnetic flux. A Hall device placed in the air gap of the magnetic core produces a Hall voltage V_h which is proportional to this flux as well as the current I_p being measured. An electronic circuit (A) amplifies this Hall voltage (V_h) allowing it to be directly utilised in the end application measurement circuit as a secondary output voltage V_s . The current sensor measures instantaneous values.

The secondary output voltage V_s is therefore directly proportional to the primary current. It is an exact replica of the primary current I_p , generally with a value of 4 V for a nominal current I_{PN} .

Mechanical features

- A wide range of primary current apertures
- PCB mounted or panel mounted
- For retrofit applications – a range of split core sensor which can easily and securely be clamped onto the primary conductor
- Integrated primary conductor available on special order
- Panel mounting with both horizontal and vertical positions.
- Compact packages

Application

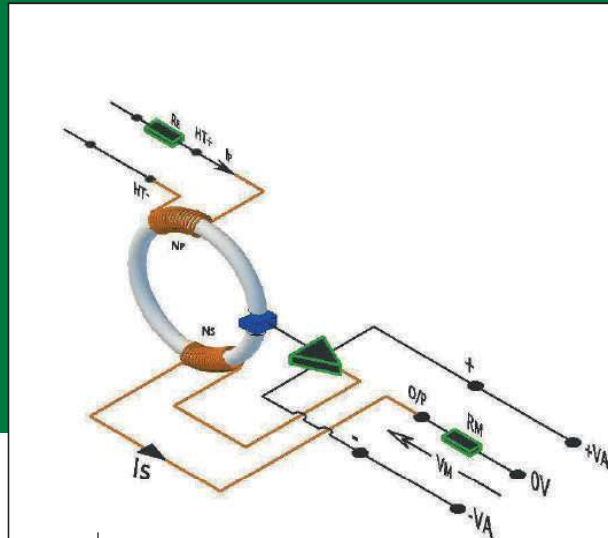
Variable speed drives, Uninterruptible Power Supplies (UPS), Active harmonic filters, Battery chargers Welding rectifiers

Advantages

The main advantages of this open loop Hall effect technology are as follows:

- Galvanic isolation between the primary and secondary circuits.
- Measurement of all waveforms is possible: direct current, alternating, current, impulse, etc.
- Good accuracy over a frequency band (from Direct current to 50 kHz)
- High reliability.
- Reduced weight and volume
- Low power consumption
- Excellent cost/performance ratio.

CLOSED LOOP VOLTAGE TRANSDUCER



Is	Secondary current
Np	Primary turns
Ns	Secondary turns
Vm	Voltage across burden Resistance
Rm	Burden Resistance

The input current proportional to the measured voltage is applied to the sensor through (current limiting) input resistors. This current is driven through the primary coil of a sensor generates an output voltage proportionate to the measured voltage in the same principle as closed loop current sensors. In this, two different options are available for voltage measurement which are as follows

- **VH series (User specified input resistors)** - In this the user connects the input resistor in series with the sensor to limit the input current. The value of the input resistor R_1 is selected according to the voltage to be measured with due consideration to the maximum input current of the sensor. This approach allows for maximum flexibility.
- **VHASM series (Integrated input resistor)** - The value of integrated input resistor determines the nominal measuring voltage of the sensors. A wide selection of nominal voltage levels are offered to cover a variety of applications.

Features

- Measurement of DC & low frequency voltages
- Galvanic isolation between input and output
- High accuracy
- Low temperature drift
- Good linearity

Applications

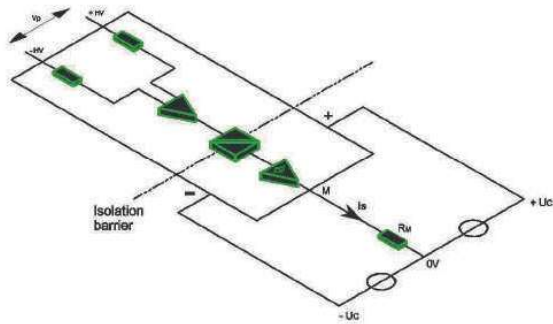
Industrial :

Variable speed drives, Uninterruptible Power Supplies (UPS), Battery chargers, Solar inverters, etc.

Railway :

Auxiliary converters (lighting, air conditioning), Battery chargers

HIGH ISOLATION VOLTAGE SENSORS



Vp	Primary voltage
Vn	Voltage across burden Resistance
Rm	Burden Resistance

Voltage sensors are suitable for measurement of DC and AC voltages with high galvanic isolation. These sensors are accurate and provide proportionate output signal to the applied input voltage for control electronics with high fidelity.

Advantages

- Measurement of DC & AC voltages
- Good accuracy & linearity
- Low drift due to temperature
- Low power consumption
- High immunity to fast common mode voltage changes (several kV/ μ s)
- Low sensitivity to electromagnetic disturbances
- Low output noise

Applications

Industrial :

Variable speed drives, Uninterruptible Power Supplies (UPS), Battery chargers, Solar inverters, etc.

Railway :

Main converters, Auxiliary converters (lighting, air conditioning), Battery chargers

GENERAL NOTES



- Ensure proper polarity of the power supply connection to avoid damage to the sensor.
- Ensure proper ESD practices when handling and installing the sensor. Static electricity or excessive voltage can damage the sensor.
- In general, it is recommended that twisted or shielded cables should be used for output signals to reduce noise pickup.
- The sensor is sensitive to magnetic fields generated by other devices. In the presence of such fields, depending on their strength and vicinity, the accuracy may be impaired
- Our specifications are guaranteed at specified Input characteristics, supply voltage, temperature, etc. Some characteristics might change, if these parameters are varied, Contact Electrohm's for information on expected performance level on parameters not mentioned on the datasheet.
- It is recommended to centrally locate the current carrying conductor or completely fill the central opening for optimum performance.
- It is recommended that the end user, to use mating connector with equivalent terminal plating material to ensure proper long term reliability and to avoid any possibility of galvanic corrosion.
- Avoid storing in high-temperature and high-humidity environment.
- For PCB mountable sensors used after a very long storage duration in in a humid environment, please check the pins for solderability before mounting in assembly
- It is recommended to perform a zero-offset adjustment in application circuit by measuring the offset voltage during installation.
- Nominal value is that value of input which the sensor operates continuously. The maximum value is measurement is rms. Current applied more than maximum rated current can result in damage to circuitry. Please contact Electrohm's to determine any overload specifications.
- Current drawn by sensor is equal to no-load current drawn plus the compensation current drawn. Please ensure the power supply feeding the sensor has required current capacity to supply total current drawn (inclusive of compensation current to the secondary winding)
- In the case of single supply voltage, the output signal varies around a nonzero value.
- We offer close-loop sensors. with standard output signals (e.g. 0-5 VDC, 0-10 VDC or 4-20 mA) for specific applications on demand.
- High frequency primary current may result in excessive heating in iron magnetic core and cause damage to internal circuitry; for high frequency applications select current sensor with ferrite core material
- If the measured current exceeds the rated current, magnetic core saturation will occur and the output voltage signal will not be linearly proportional to the measured current.
- Due to their principle of operation (measure of magnetic field by the Hall effect probe). closed loop hall effect current sensors can be sensitive to strong magnetic fields. It is recommended to avoid positioning them to close to high current power cables. Open Loop hall sensor have the offset and gain potentiometer setting sealed after factory setting. Removal of the sealant affect the performance and warranty claim will not be accepted

SAFETY INSTRUCTIONS



- This Sensor must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.
- Caution, risk of electrical shock
- When operating the Sensor, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply).
- Ignoring this warning can lead to injury and/or cause serious damage.
- A protective housing or additional shield could be used.
- Over currents (»IPN) can cause an additional voltage offset due to magnetic remanence.
- Temperature of the primary conductor shall not exceed 100 °C.
- This Sensors must be used in electrical or electronic systems as per the applicable standards.
- Protect non-isolated high-voltage current carrying parts against direct contact (e.g. with a protective housing)
- When installing the sensor, ensure that the safe separation (between primary circuit and secondary circuit) is maintained over the whole circuits and their connections.

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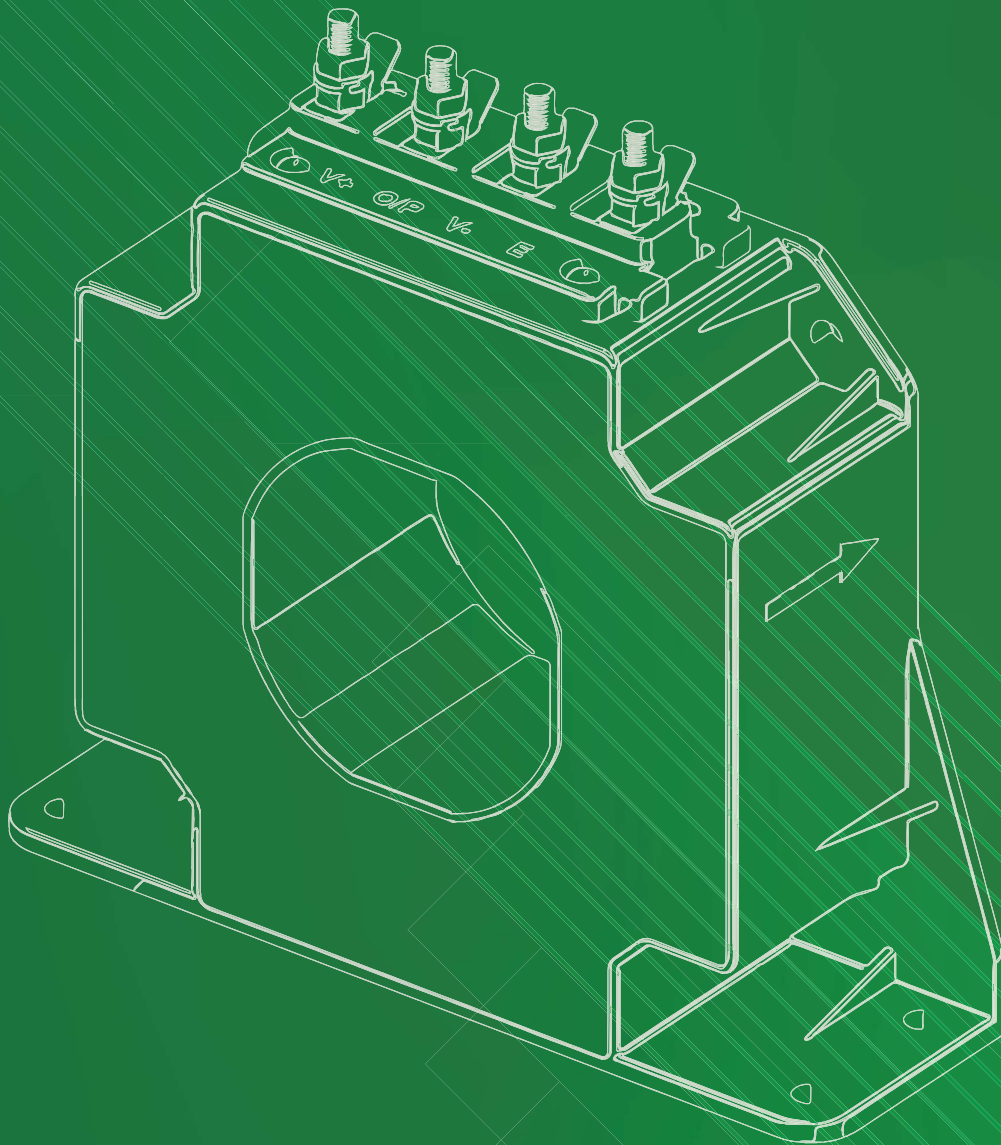
P.I. Can Tapiols c/Narcís Monturiol, 4 Nave 10
08110 Montcada y Reixach, Barcelona, España
Tel. 935790610 comercial@proat.es

Electrohms Private Limited

No. 67/6-1, Industrial Suburb, Yeswanthpur, Bengaluru 560 022. INDIA

Telephone: +91 80 43492200, 43492211 to 17 • Fax: +91 80 23571852

✉ Email : sales@electrohms.com



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