TECHNICAL DATASHEET

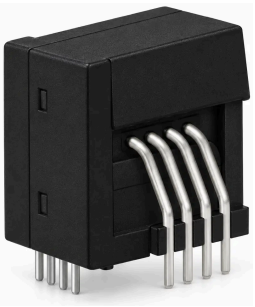
EMT-25CP4

Product Code : 10700025031200001

Board-mount precision current sensor, open-loop Hall-effect, digitally calibrated and compensated

The EMT-25CP4 is a board-mount precision current sensor powered by a high-sensitivity, programmable Hall IC, factory-calibrated and compensated through software to ensure high accuracy in the measurement of DC, AC and pulsed currents up to 25 A. It provides galvanic isolation between the primary and secondary circuits.

Part of the ADISENS EM-EMT-EMK series (through-hole primary conductor terminals, 4-pin EMT pinout), it delivers a proportional analog output voltage centred on a 2.5 V offset, with a measuring range of ±75 A and support for 1, 2 or 3 primary turns for range scaling.



25 A	±75 A	4 kV	<2 µs
Rated nominal current	Measuring range	Dielectric strength	Typ. response time

ENGINEERING VALUE

Galvanic isolation — reliable separation between primary and secondary circuits.

Low temperature coefficient and excellent linearity — typical linearity error 0.3% of IPN, accuracy ±1% at 25°C.

Fast response time — typ. <2 µs reaction and step-response time, 250 kHz bandwidth.

Good dv/dt immunity and extended measuring range for unipolar measurement.

BEST-FIT APPLICATIONS

Motor drives — AC variable speed and servo motor drives, static converters for DC motor drives.

Power supplies — switched-mode power supplies (SMPS), UPS, welding power supplies.

Photovoltaic inverters — DC/AC solar inverter stages for photovoltaic power-conversion systems.

Energy — battery-supplied applications.

Compliance and warranty markings

CE RoHS COMPLIANT

WARRANTY 3 YEARS ADISENS

Standards: IEC 61010-1 EN 50178

ADISENS Ltd | POD 2, The Old Station House, 15A Main Street, Blackrock, Co. Dublin, A94 T8P8, Ireland
contact@adisens-tech.com | www.adisens-tech.com |

Electrical and performance data

Condition: V_{CC} = 5.0 V, N_P = 1, R_L = 10 kΩ, T_A = 25°C, unless specified.

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Primary nominal current	IPN	-	-	25	-	A
Measurement range	IPM	-	-75	-	75	A
Supply voltage	VCC	-	4.75	5	5.25	V
Consumption current	IC	-	-	15+IP	-	mA
Current turns	NP	-	-	1, 2, 3	-	-
Offset voltage	VOFF	Output @ 0 A	2.48	2.5	2.52	V
Electrical offset voltage	VOE	100% tested, VOUT−VREF @ 0 A	-	5	-	mV
Output voltage @ IPN	VFS	-	-	VOFF ±0.625	-	V
Output voltage @ IPM	VFSM	-	-	VOFF ±1.875	-	V
Theoretical sensitivity	Gth	0.625 V @ IPN	-	25	-	mV/A
Linearity error, 0 to IPN	ξL	Tested @ 25°C	-	0.3	-	% of IPN
Reaction time @ 10% of IPN	tra	-	-	<2	-	µs
Step response time @ 90% of IPN	tr	-	-	<2	-	µs
Bandwidth	BW	-3 dB	-	250	-	kHz
Noise, DC–10 kHz / DC–100 kHz	Vnoise	-	-	5 / 6	-	mVpp
Accuracy @ RT	X	@ 25°C	-1	-	1	% of IPN
Accuracy	X	TA = -40°C to +105°C	-1.5	-	1.5	% of IPN

Isolation, environmental and mechanical characteristics

Parameter	Symbol	Value	Unit	Comment
Impulse withstand isolation voltage 1.2/50µs	VW	6	kV	-
Dielectric strength	VD	4	kV	AC 50 Hz / 1 min
Clearance	dCL	9.5	mm	Shortest distance through air
Creepage distance	dCP	9.5	mm	Shortest path along the body
Electrical clearance	dCe	6.1	mm	When mounted on PCB with recommended layout (EMT)
Case material	-	UL94-V0	-	-
Operating temperature	TA	-20 … +105	°C	-
Storage temperature	TSTG	-40 … +125	°C	-
Mass	m	13	g	-

Ordering information		
Part number	**Product code**	**Rated current / measuring range**
EMT-25CP4	10700025031200001	25 A / ±75 A

The specified measurement performance is achieved only when the sensor is used within the stated electrical, thermal and load conditions.

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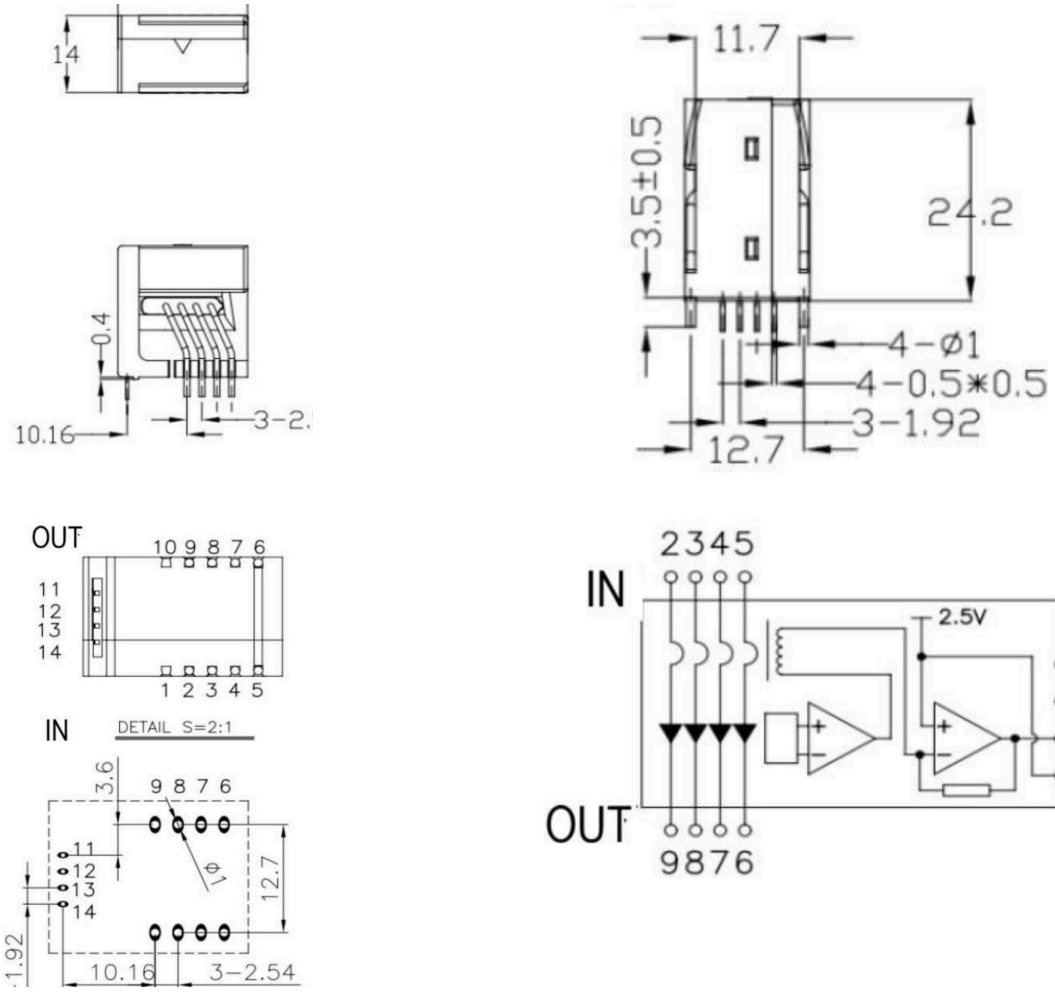
Mechanical dimensions and connections



All dimensions are in millimetres. Board-mount package, primary conductor pin pitch 10.16 mm, secondary pin pitch 2.54 mm. Package outline and secondary-pin arrangement are shared across the EM-15/25/50, EMT-15/25/50 and EMK-15/25/50/75 calibres within the EMT pinout.

Pin definition (EMT pinout, 4-pin primary)

Pin no.	Pin name	Description
2, 3, 4, 5	IN	Primary conductor terminal, input side
6, 7, 8, 9	OUT	Primary conductor terminal, output side
11	VREF	Reference output voltage, 2.5 V typ.
12	VOUT	Analog output voltage, VOUT = VOFF + Gth×IP
13	GND	Supply and signal ground (0 V)
14	VCC	Positive supply voltage, +5 V ±5%

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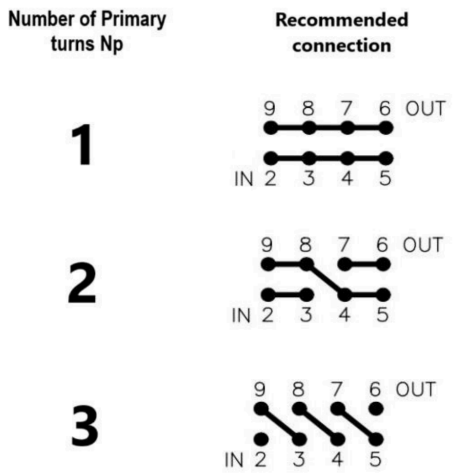
Number of primary turns and recommended connection

The primary current path can be routed for 1, 2 or 3 turns (Np) to extend the effective measuring range downward, by connecting the primary IN/OUT pins as shown below.



Installation essentials

1. **Primary routing:** connect the primary conductor across the IN/OUT pins listed above; for 2 or 3 primary turns, route the conductor through the additional IN/OUT pin pairs as shown in the recommended-connection table, to extend the effective downward measuring range.
2. **Supply and output:** connect VCC/GND per pin definition; the analog output VOUT is referenced to VREF and centred on the VOFF offset voltage.
3. **Load:** the output stage is characterized with RL = 10 kΩ; do not load VOUT beyond the specified conditions.
4. **Grounding:** ensure correct grounding of the secondary circuit in accordance with the electrical system design, to prevent electric shock and improve system safety and performance.

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Safety, compliance and quality information

Safety information

The EMT-25CP4 is a component intended for installation in electrical and electronic systems by qualified personnel, in compliance with applicable international standards such as IEC 61010-1 and local regulations. This transducer operates in high-voltage environments and 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. It must be used exclusively within limited-energy secondary circuits as specified by IEC 61010-1. Galvanic isolation between primary and secondary circuits does not provide absolute protection against electric shock — always de-energize circuits before installation or maintenance.

Compliance and environmental information

Subject	Information
Electrical safety	Designed for integration into equipment assessed to applicable electrical-safety requirements, including IEC 61010-1, EN 50178 where relevant to the end application.
Materials	Moulded plastic housing, UL94-V0. Further product material and flammability information is available from ADISENS on request.
CE	EU conformity information and the applicable Declaration of Conformity are available from ADISENS on request.
RoHS / REACH	RoHS & REACH compliant. Product environmental declarations are available from ADISENS on request.
Disposal	Dispose of the product in accordance with local requirements for electrical and electronic equipment. Do not incinerate.

Three-year commercial warranty

ADISENS provides a three-year commercial warranty from the date of delivery, subject to the applicable ADISENS warranty terms and conditions. The warranty does not cover incorrect wiring, operation outside specified ratings, unsuitable environmental exposure, unauthorized modification, mechanical damage or improper system integration.

Document identification and control

Document reference	Revision	Issue date	Language	Product code
FT-EMT-25CP4	V1.0	September 2026	English	10700025031200001

This document is maintained under the ADISENS quality-management document-control process. Always verify that the revision used is the latest version available from ADISENS. Specifications may be updated as part of continuous product improvement. The customer remains responsible for confirming suitability for the intended application.

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