

PRODUCT RANGE OVERVIEW

Isolated Hall-effect voltage sensors for railway & industrial power systems

The COSY-C-xxxS3 range — 9 calibres from 50 V to 2000 V, galvanically isolated, engineered for accurate, safe voltage measurement in the harshest onboard and industrial environments.

Wherever a high or medium voltage circuit needs to be monitored without exposing control electronics to it, a designer faces the same problem: the measurement point sits on a potential that can reach hundreds or thousands of volts, while the controller, protection relay or energy meter reading it must stay referenced to a safe, isolated ground.

The COSY-C-xxxS3 family solves this with a bi-directional, isolated Hall-effect measurement principle: the primary voltage drives an isolating amplifier, which produces a secondary current strictly proportional to it — with no direct electrical link between the two sides. The result is a voltage transducer that is accurate, fast, and safe to install directly across live circuits, from auxiliary 50 V rails to 2000 V traction and industrial buses.

Nine calibres share one mechanical platform, one connection scheme and one qualification pathway — simplifying specification, sourcing and maintenance across an entire fleet or plant.



9 calibres, 50–2000 V	8.5 kV dielectric strength (AC)	±0.5% typical accuracy	30 µs delay time (10%)	6 standards, incl. railway
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- EN 50155
- EN 50178
- EN 50124-1
- EN 50121-3-2
- EN 45545
- EN 61373

"Sensors must provide galvanic separation between primary and secondary circuits, with high measurement accuracy, low temperature drift and noise immunity, under stringent environmental and safety constraints" — a requirement shared across railway traction and demanding industrial power conversion alike.

Where isolated voltage measurement is required

Any system that regulates, protects or bills electrical energy needs to know the voltage it is handling — without letting that voltage reach the control electronics. The applications below are the ones most commonly built around isolated Hall-effect voltage sensors like COSY-C-xxxS3.

Railway traction & rolling stock

Onboard converters and inverters need continuous, isolated voltage feedback from the catenary/third-rail input and from the DC intermediate bus to regulate propulsion and auxiliary power (HVAC, lighting, doors) and to trigger protection in a fault. EN 50155, EN 45545 and EN 61373 certified components are mandatory for anything mounted on a train.

Industrial power electronics & drives

Variable-speed drives, welding power supplies and industrial rectifiers all regulate a DC bus or an AC line whose voltage must be measured precisely and safely for control loops, overvoltage protection and diagnostics — without a galvanic path back to the mains.

Renewable energy & power conversion

Solar and wind power converters, battery inverters and energy-storage systems need isolated DC-link and array voltage measurement to maximise energy harvest, balance strings, and shut down safely under fault conditions.

UPS, SMPS & battery systems

Uninterruptible power supplies and high-power switch-mode supplies monitor input, bus and battery voltage continuously; isolation prevents ground loops and protects control boards from transients on the power stage.

Why galvanic isolation matters

Safety

Direct measurement of a high-voltage circuit puts the measuring electronics at that same potential. Galvanic isolation keeps the secondary side — and the operator — at a safe reference, which is why isolated voltage sensors are specified wherever personnel or sensitive control systems share an enclosure with a high-voltage bus.

Accuracy under noise

Power converters generate fast switching transients and strong electromagnetic interference. A galvanically isolated measurement path rejects common-mode noise that would otherwise corrupt a direct or resistive-divider measurement, preserving control-loop stability and metering accuracy.

Standardised, drop-in output

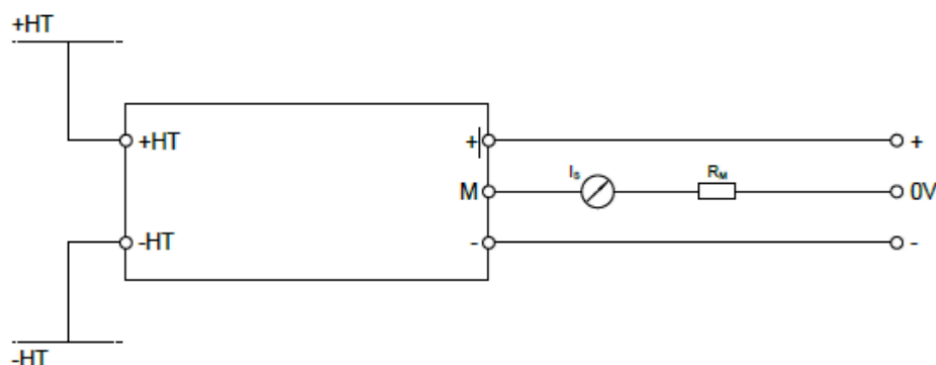
The isolated secondary current output is easily converted to a standard measurement voltage through an external resistor, making the sensor a drop-in replacement across control platforms without redesigning the acquisition electronics for each project.

One platform, many voltages

Because the same measurement principle and mechanical footprint scale from 50 V to 2000 V, equipment manufacturers can standardise on one qualified sensor family across an entire product line instead of re-qualifying a different technology for each voltage class.

How the COSY-C-xxxS3 measures voltage

A bi-directional, isolated power-supply and measurement principle, common to all 9 calibres.



1. The primary voltage to be measured is applied directly to the +HT and -HT terminals of the sensor.
2. It passes through an isolating amplifier and is converted into a secondary output current I_s , electrically isolated from the primary voltage and exactly proportional to it.
3. I_s flows through an external measuring resistor R_M ; the resulting measurement voltage V_M is therefore also exactly proportional to the primary voltage.
4. The sensor's own power supply is likewise isolated from the primary voltage — no galvanic path exists anywhere between the high-voltage circuit and the control system.

Technical highlights across the range

Parameter	Range across COSY-C-xxxS3
Primary nominal voltage V_{PN}	50 to 2000 V (9 calibres)
Primary voltage measuring range	$\pm 1.5 \times V_{PN}$
Dielectric strength (AC, 50 Hz, 1 min)	8.5 kV
Insulation resistance	1000 M Ω
Accuracy @25°C	$\pm 0.5\%$
Accuracy over full temperature range	$\pm 1.0\%$
Delay time (10% / 90% of final value)	30 / 50 μ s
Ambient operating temperature	-40 to +85°C
Standards	EN 50155, EN 50178, EN 50124-1, EN 50121-3-2, EN 45545, EN 61373

Values shown are typical across the range; exact figures per calibre are given in the individual COSY-C-xxxS3 datasheets. Some parameters vary by calibre and by manufacturing source — consult the relevant reference sheet for design-in.

Why choose ADISENS for the COSY-C-xxxS3 range

1 One qualified platform, nine calibres

A single mechanical envelope, connection scheme and documentation structure across 50–2000 V simplifies specification, stocking and spare-parts management.

3 ISO 9001 documentation

Every reference ships with a full technical datasheet under ADISENS' ISO 9001 document-control process, with unique document and product codes for traceability.

5 3-year commercial warranty

All COSY-C-xxxS3 references are covered by ADISENS' standard three-year warranty against manufacturing defects.

2 Railway-grade by design

Certified against EN 50155, EN 50178, EN 50124-1, EN 50121-3-2, EN 45545 and EN 61373 — suitable for onboard rolling-stock installation as well as industrial use.

4 Engineering support

ADISENS supports customers through calibre selection, interpolation of intermediate ratings, and qualification — drawing on direct manufacturing and supplier-integration experience.

6 Built for harsh environments

–40 to +85°C operating range and low-drift, low-noise output keep measurement accuracy stable in vibration-heavy, EMI-dense onboard and industrial enclosures.



RöHS
COMPLIANT



Ready to specify COSY-C-xxxS3?

Ask ADISENS for the full technical datasheet of any calibre, or for support selecting the right one for your application.

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