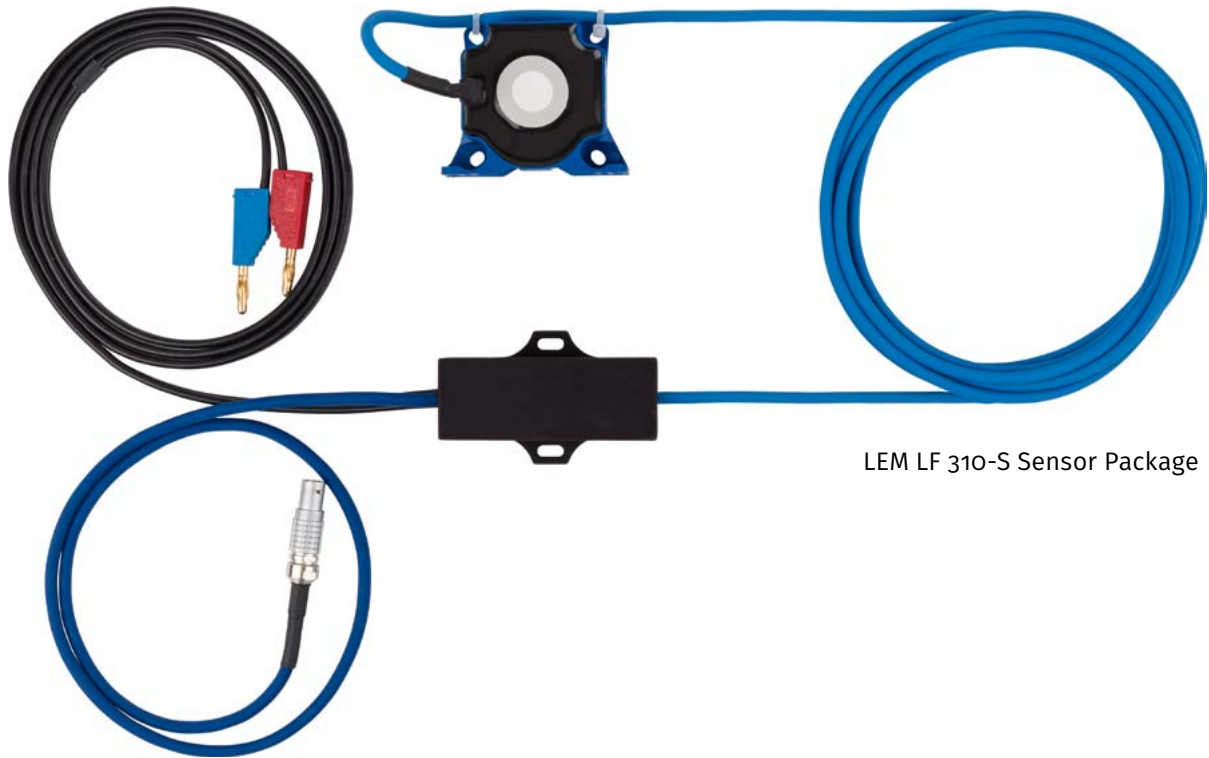




LEM Sensor Package

Type LF 210-S/SP3 | LF 310-S | LF 1010-S



LEM LF 310-S Sensor Package

Product description

The CSM LEM Sensor Packages combined with measurement modules of the AD4 ECAT MM series allow very precise measurements of electrical currents up to $\pm 1,250$ A (max. 800 A RMS continuously) with signal frequencies up to 200 kHz (LEM LF 1010-S).

An AD4 ECAT MiniModule can measure up to four electrical currents synchronously. Alternatively, up to four voltages can be measured synchronously. It is therefore also possible to measure electrical power.

The applied current transducer ensures galvanic isolation between test object and measurement system and is thus suitable for high-voltage applications.

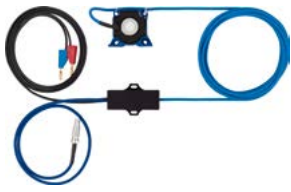
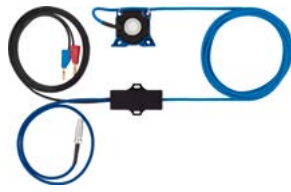
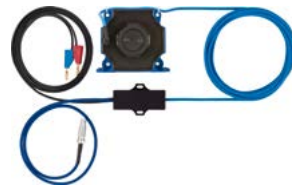
Shipping content

- ▶ LEM Sensor Package
 - ▶ Sensor LEM LF 210-S/SP3 | LEM LF 310-S | LEM LF 1010-S
 - ▶ Signal conditioning
 - ▶ Cabling (ready to be connected)

Key features

- ▶ *Precise measurements on electrical components in vehicles for the optimization of power and fuel consumption*
- ▶ *Ready-to-use solution for current measurements up to $\pm 1,250$ A with sensor LEM LF 1010-S*
- ▶ *Prepared for TEDS support according to IEEE 1451.4*
- ▶ *High accuracy and frequency bandwidth (200 kHz) even at $\pm 1,250$ A measurement current (LEM LF 1010-S)*
- ▶ *Fast and synchronous ($< 1 \mu\text{s}$) current measurements (e.g. of all three phases)*
- ▶ *Possible use in 48 V on-board supply systems and high-voltage environments*

Technical data

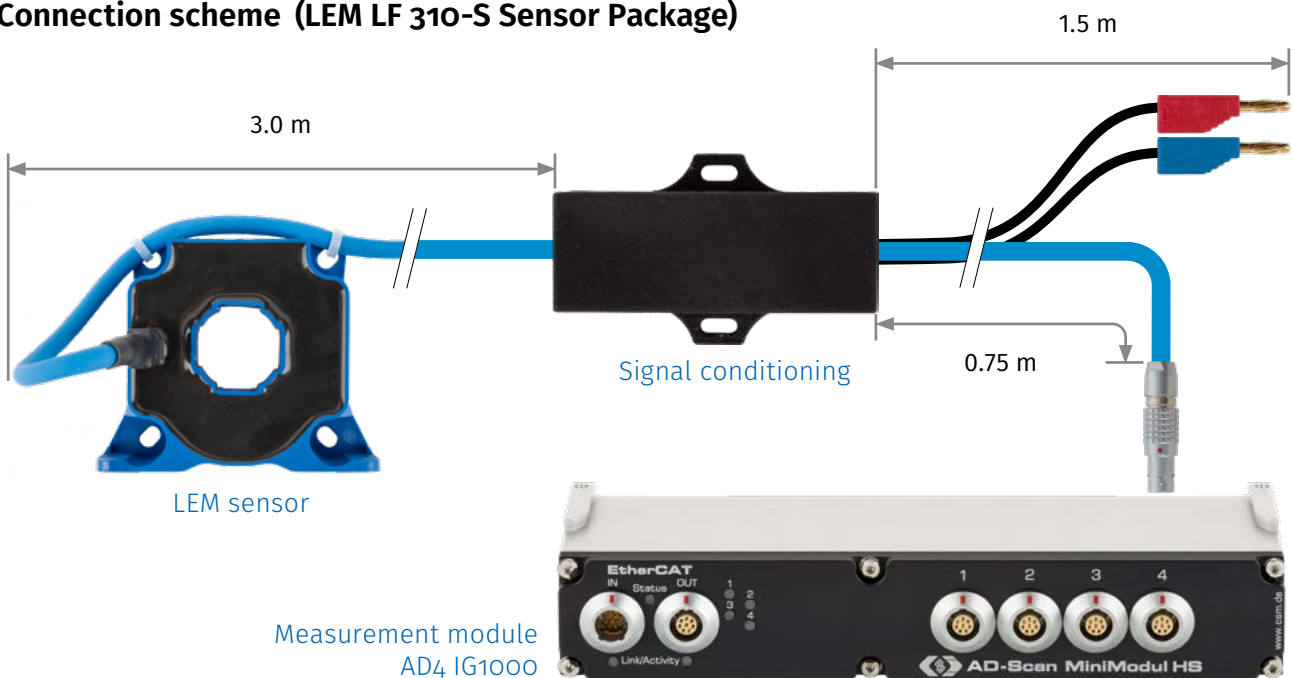
Type designation	LEM LF 210-S/SP3 Sensor Package	LEM LF 310-S Sensor Package	LEM LF 1010-S Sensor Package
Technical data valid as of revision	B001		
			
Notice	technical data of LEM sensor according to manufacturer specification: https://s.csm.de/lf210-s https://s.csm.de/lf310-s https://s.csm.de/lf1010-s		
Nominal current (for continuous operation)	up to 100 A RMS ▶ see section "Product variants"	max. 300 A RMS	max. 800 A RMS
Measurement range	up to ±200 A ▶ see section "Product variants"	±500 A	±1,250 A
Threshold frequency	100 kHz	100 kHz	200 kHz
Measurement uncertainty			
Internal shunt	max. ±0.02 % of measured value, 5 ppm/K		
LEM sensor	details see LEM Specification		
TEDS support	prepared according to IEEE 1451.4		
Power supply	externally powered via U_{Bat} of the vehicle with active reverse polarity protection		
Minimum	9 V DC		
Maximum	36 V DC		
Power consumption			
Minimum	1.5 W	1.5 W	1.8 W
	at 0 A ("idle")		
Maximum	5.1 W	6.0 W	6.0 W
Output voltage	±5 V at measurement range		
Recommended measurement range	±5 V (AD4 ECAT MM Series)		
Housing	signal conditioning only ▶ see section "Connection scheme"		
Protection class	IP67 (potted)		
Dimensions (w × h × d)	approx. 30 × 25 × 90 mm		
Connectors			
Power supply	banana plugs		
Output (to module)	LEMO 1B, 8-pole, code G		
Operating and storage conditions	signal conditioning only ▶ see section "Connection scheme"		
Operating temperature range	-40 °C to +85 °C		

Type designation	LEM LF 210-S/SP3 Sensor Package	LEM LF 310-S Sensor Package	LEM LF 1010-S Sensor Package
Cable lengths			
To power supply		1.5 m	
To LEM sensor		3.0 m	
To measurement module		0.75 m	

Product variants (LEM LF 210-S/SP3 Sensor Package)

Name suffix	_200	_100	_50	_20	_10	_5
Nominal current (for continuous operation)	max. 100 A RMS	max. 100 A	max. 50 A	max. 20 A	max. 10 A	max. 5 A
Measurement range	±200 A	±100 A	±50 A	±20 A	±10 A	±5 A

Connection scheme (LEM LF 310-S Sensor Package)



additional products

AD4 IG1000

The EtherCAT® measurement module **AD4 IG1000** of the **AD4 ECAT MM Series** features a maximum measurement data rate of 1 MHz per channel and has been designed for the acquisition of very fast analog signals in the fields of automotive measurement technology.



XCP-Gateway

The protocol converter **XCP-Gateway** is especially designed for the CSM EtherCAT® measurement module series and has been developed for measurement tasks with numerous measurement channels and high measurement data rates. **XCP-Gateway** is available in two versions: „Basic“ and „pro“. **XCP-Gateway pro** features two CAN interfaces to be used for connecting CSM's CAN-based measurement modules and to integrate them into the measurement data protocol XCP-on-Ethernet.





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To product page
at www.csm.de

