

	3,3kV voltage transducer	Document Nr	Rev. 00
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PRODUCT DESCRIPTION

The high voltage transducer is a product for measure DC or AC voltage up to 4000 Vac rms.

The input voltage signal is attenuated by several resistor, then the voltage is converted to low level signal by a LEM transducer powered by a DC/DC converter, finally the output voltage of the transducer is amplified to a signal up to 5Vrms.

The high voltage transducer consists of four part:

a LEM high voltage transducer,

a series resistor,

a DC/DC converter for insulate the high voltage input signal from the low voltage output signal,

an amplifier for adapt the high voltage transducer output signal to the required low level output signal.

The high voltage transducer consist of the CV3-2000 product of the company LEM, this transducer require a supply of a $\pm 15V=$ insulated from the AC measured voltage, the AC inputs voltage are marked with the HT+ and HT- terminal.

The maximum AC input voltage of the CV3-2000 transducer applied to the terminal HT+ and HT- is equal to 1400 Vac, for extending the measured voltage a series resistor is inserted from the input signal to the voltage terminal of the LEM transducer, in other words the AC voltage to be measured is connected to the CSP137A board and then after the series resistor, the AC voltage is connected to the HT+, HT- terminal of the LEM transducer.

The described input resistors are equal to 3+3 resistors of 150 kOhm value for extending the AC voltage up to 4000 Vac, this non inductive resistor are integrated inside the CSP137A board.

Inside the CSP137A board the $+24V=$ supply input voltage is converter to a dual voltage $\pm 15V=$ by an insulated DC/DC converter of 6W output power and a insulation voltage level of 10kV from the 24V= input power supply to the output voltage of the amplifier.

The dual $\pm 15V=$ is applied to the LEM transducer voltage, the output signal of the transducer will be present from the M and 0V terminal, this voltage is amplified from a non inverting amplifier stage with a variable gain from 0.46 to 0.76 (in the factory setting) or with a fixed gain of 0.6 (other setting).

The functional diagram of the voltage transducer is shown below:

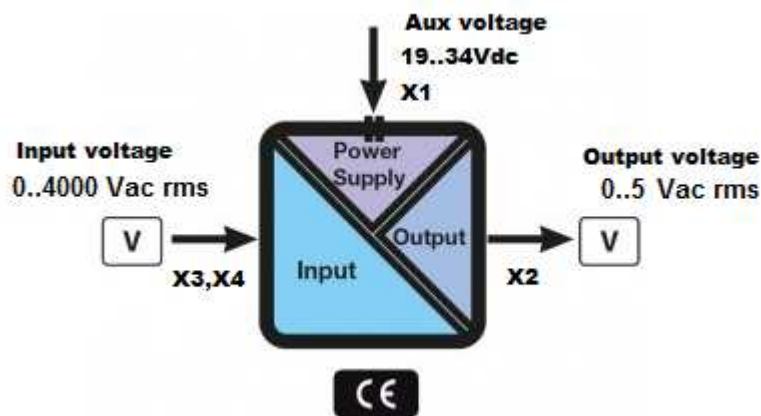


Fig. 1 - CSP137A_3300 logical diagram

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TECHNICAL FEATURES

The following technical features are valid for the voltage transducer CSP137A_3300:

Electrical data	
Power Supply	Min 19 V=, Max 34V=
Consumption	Max 250mA at 19V=, V input max and Load resistor = 150 Ohm
Input impedance from input voltage + and – pole	1550 kOhm
Transducer type	Closed loop (compensated) voltage transducer
Nominal Input voltage	3300 Vac or dc
Bandwidth	10kHz
Nominal gain	0,6 Jumper (JP1=on, JP2=off).
Nominal gain	0,46 to 0,76 (JP1=off, JP2=on).
Output voltage range (Load resistor = 10 kOhm)	4,1 Vac rms, $\pm 5,8$ Vpk *
Output voltage range (Load resistor = 150 Ohm)	3,76 Vac rms, $\pm 5,3$ Vpk *
Maximum Input voltage	4000 Vac or dc
Output voltage range (Load resistor = 10 kOhm)	4,5 Vac rms, $\pm 7,0$ Vpk **
Output voltage range (Load resistor = 150 Ohm)	4,17 Vac rms, $\pm 5,9$ Vpk **
Minimum load resistor	150 Ohm 1W
Insulation voltage from input HT+, HT- to output	6kVac for 1 minute
Insulation voltage from 24 DC input to output	10kVdc for 1 minute
Led meaning	+24Vdc input present
Connections	Spring terminal 1..2,5 mm ² for X1, X5, X6 Spring terminal 0,25..1,5 mm ² for X2 M4 Screw terminal 1..2,5 mm ² for X3, X4
Standards	Safety EN60950-1:2006 +A12:2011 Electronic equipment for use in power installations: EN50178 CE

* When Input voltage is 3300Vac, with the factory setting gain = 0.6 (Jumper JP1=on, JP2=off).

** When Input voltage is 4000Vac, with the factory setting gain = 0.6 (Jumper JP1=on, JP2=off).

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Mechanical data	
Total Dimension (length x width x height)	340 x 190 x 140 mm (with the cover)
Mass	3000 g.
Transducer fastening	6 holes diameter 6mm, 6xM5 steel screws
Housing material	Plastic, recognized according to UL 94-V0
Vibration and shock load	In accordance with EN 60721-3-2 In accordance with EN 60068-2-6
Protection degree EN60529	IP00 without the cover, IP20 with the cover
Cooling system	Natural convection
Ambient conditions	
Operating	-10°C to +65°C Humidity 30..90% at 40°C (no condensation)
Storage	Class 1K3 to EN 60721-3-1 and temperature range -40°C to + 70°C
Transportation	Class 2K4 to EN 60721-3-2 and temperature range -40°C to + 70°C
Operation	Class 3K3 to EN 60721-3-3
Installation altitude	< 2000 m above sea level
Conformity	CE (Low voltage and EMC Directives)

ELECTRICAL DIAGRAM

A typical connection of the high voltage transducer is showed below:

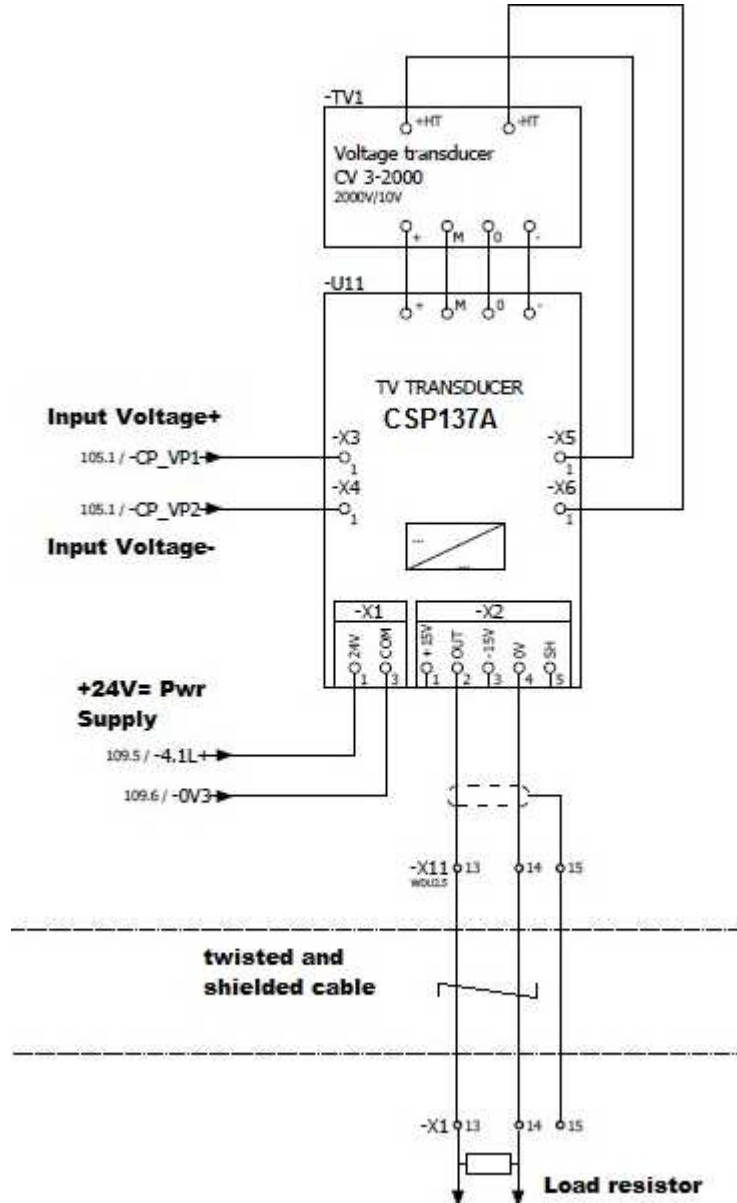


Fig. 2 – CSP137A example of connection

The high input voltage + is connected in the connector X3:1 of the CSP137A board,
 The high input voltage – is connected in the connector X4:1 of the CSP137A board,
 The connection X5:1 of the CSP137A board is connected to the terminal HT+ of the CV3-2000 transducer,
 the connection X6:1 of the CSP137A board is connected to the terminal HT- of the CV3-2000 transducer.
 The CP137A board is inserted over the transducer CV3-2000, in this way the connection +15V=, 0V, M of the transducer are connected to the CSP137A board.
 The +24V= input power supply is connected in the connector X1:1 (+24V=) and X1:3 (0V=).

The output signal of the transducer is available to the connector X2:2 (+) and X2:4.