

	12.5kV voltage transducer	Document Nr	Rev. 01
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PRODUCT DESCRIPTION

The 12.5kVac voltage transducer is a product for measure DC or AC voltage of nominal voltage equal up to 12,5 kVac rms.

The input voltage signal is attenuated by several resistor, then the voltage is converted to a 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 3.2Vrms.

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 +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 CSP141A_I board and then after the series resistor is connected to the CSP141A_S board, where other series resistor are connected before the LEM transducer, the AC voltage is then connected to the HT+, HT- terminal of the LEM transducer.

For extending the AC voltage up to 12500 Vac,

the described input resistors are equal to 12 non inductive resistors of 180 kOhm, CSP141A_I board, and 24 non inductive resistor of 150 kOhm value, integrated inside the CSP141A_S.

Inside the CSP141A_S board the +24V= supply input voltage is converter to a dual voltage +-15V= by an insulated DC/DC converter of 6W output power and a insulation voltage level of 10k Vdc from the 24V= input power supply to the output voltage of the amplifier.

The dual +-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 0.66 (in the factory setting) or with a fixed gain of 0.5 (other setting).

The functional diagram of the voltage transducer is shown below:

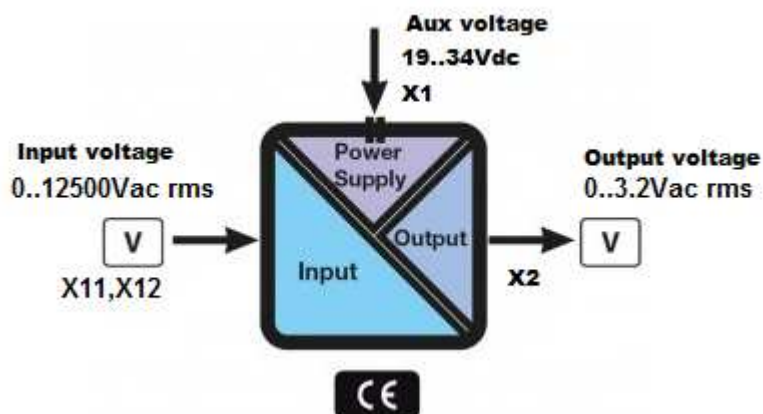


Fig. 1 – CSP141A_12500 logical diagram

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TECHNICAL FEATURES

The following technical features are valid for the voltage transducer CSP141A_12500:

Electrical data	
Power Supply	Min 19 V=, Max 34V=
Consumption	Max 250mA at 19V=, V input max and Load resistor = 68 Ohm
Input impedance from input voltage + and – pole	6400 kOhm
Transducer type	Closed loop (compensated) voltage transducer
Nominal Input voltage	12500 Vac or dc
Bandwidth	10kHz
Nominal gain	0,5 Jumper (JP1=off, JP2=on).
Nominal gain	0,46 to 0,66 (JP1=on, JP2=off), set to 0,5 (factory setting)
Nominal output voltage (Load resistor = 10 kOhm)	3,2 Vac rms, $\pm 4,5$ Vpk *
Output voltage range (Load resistor = 150 Ohm)	2,92 Vac rms, $\pm 4,13$ Vpk *
Minimum load resistor	68 Ohm 1W
Insulation voltage from X11, X12 input to output	15kVac for 1 minute
Insulation voltage from 24 DC input to output	10kVdc, 1kVac for 1 minute
Led meaning	+24Vdc input present
Connections	Spring terminal 1..2,5 mm ² for X11, X12 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

* With the factory setting gain = 0.5 (Jumper JP1=on, JP2=off).

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Mechanical data	
Total Dimension (length x width x height)	380 x 190 x 162 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:

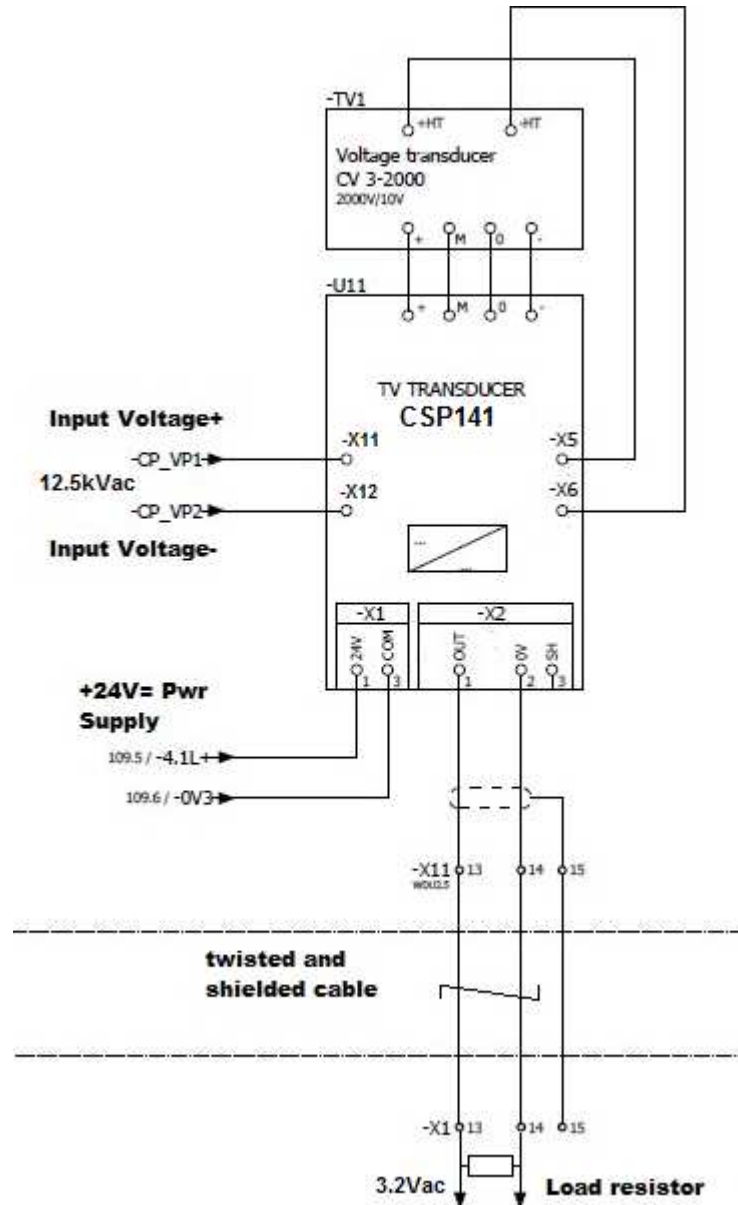


Fig. 2 – CSP141 example of connection

The high input voltage + is connected in the connector X11 of the CSP141A board,
The high input voltage – is connected in the connector X12 of the CSP141A board,
The connection X5:1 of the CSP141A board is connected to the terminal HT+ of the CV3-2000 transducer,
the connection X6:1 of the CSP141A board is connected to the terminal HT- of the CV3-2000 transducer.
The CP141A board is inserted over the transducer CV3-2000, in this way the connection +15V=, 0V, M of the transducer are connected to the CSP141A 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 X2:1 (+) and X2:2 (-).