Voltage Transducer CV 4-6000

U_{PN} = 4242 V

For the electronic measurement of voltages: DC, AC, pulsed..., with galvanic separation between the primary circuit and the secondary circuit.

Electrical data

U_{PN}	Primary nominal RMS voltage	4242	V
U_{PM}	Primary voltage, measuring range	0 … ±6000	V
U_S	Secondary voltage @ $U_{P\,max}$	10	V
S	Sensitivity	6000 V / 10 V	
R_L	Load resistance	≥ 2	kΩ
C_L	Load capacitance	≤ 5	nF
U_C	Supply voltage (±5 %)	±15	V
I_C	Current consumption @ U_C = ±24 V	35 + U_S / R_L	mA

Accuracy - Dynamic performance data

		Max	
ε_{tot}	Total error @ @ U_{PN}, T_A = 25 °C	±1	%
	−25 °C ... +70 °C	±2	%
U_O	Offset voltage @ U_P = 0, T_A = 25 °C	±30	mV
	−25 °C ... +70 °C	±60	mV
$t_{D\,90}$	Delay time to 90 % of the final output value for U_{PN} step [1]	≈ 25	µs
BW	Frequency bandwidth (−3 dB) @ 50 % U_{PN}	DC … 11	kHz

General data

T_A	Ambient operating temperature	−25 … +70	°C
$T_{A\,st}$	Ambient storage temperature	−40 … +85	°C
P_P	Total primary power loss	4.28	W
R_P	Resistance of primary (winding)	4.20	MΩ
m	Mass	600	g
	Standard	EN 50178: 1997 EN 50155: 2007 EN 50121-3-2: 2016 [2]	

Notes: [1] For a dv/dt = 1000 V/µs.
[2] Variation of the offset during the test IEC 61000-4-3 between 100 to 300 MHz: 4.5% of nominal value.

Features

- Closed loop (compensated) voltage transducer using the Hall effect
- Insulating plastic case recognized according to UL 94-V0.

Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized response time
- Wide frequency bandwidth
- No insertion losses
- High immunity to external interference
- Current overload capability.

Applications

- AC variable speed drives and servo motor drives
- Static converters for DC motor drives
- Uninterruptible Power Supplies (UPS)
- Power supplies for welding applications
- Railway overhead line voltage measurement
- Single or three phase inverters
- Propulsion and braking choppers
- Propulsion converters
- Auxiliary converters
- Battery chargers.

Application Domains

- Railway (fixed installations and onboard)
- Industrial.

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	9 [1)] Min	kV
d_{Cp}	Creepage distance	188	mm
d_{Cl}	Clearance	124	mm
CTI	Comparative tracking index (group I)	600	

Note: [1)] Between primary and secondary.

Applications examples

According to EN 50178 and IEC 61010-1 standards and following conditions:

- Over voltage category OV 3
- Pollution degree PD2
- Non-uniform field

	EN 50178	IEC 61010-1
d_{Cp}, d_{Cl}, U_{Ni}	Rated insulation voltage	Nominal voltage
Basic insulation	8000 V	1000 V
Reinforced insulation	5600 V	1000 V

Safety

This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.

This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.

Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (e.g. primary connections, power supply).
Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a build-in device, whose conducting parts must be inaccessible after installation.
A protective housing or additional shield could be used.
Main supply must be able to be disconnected.

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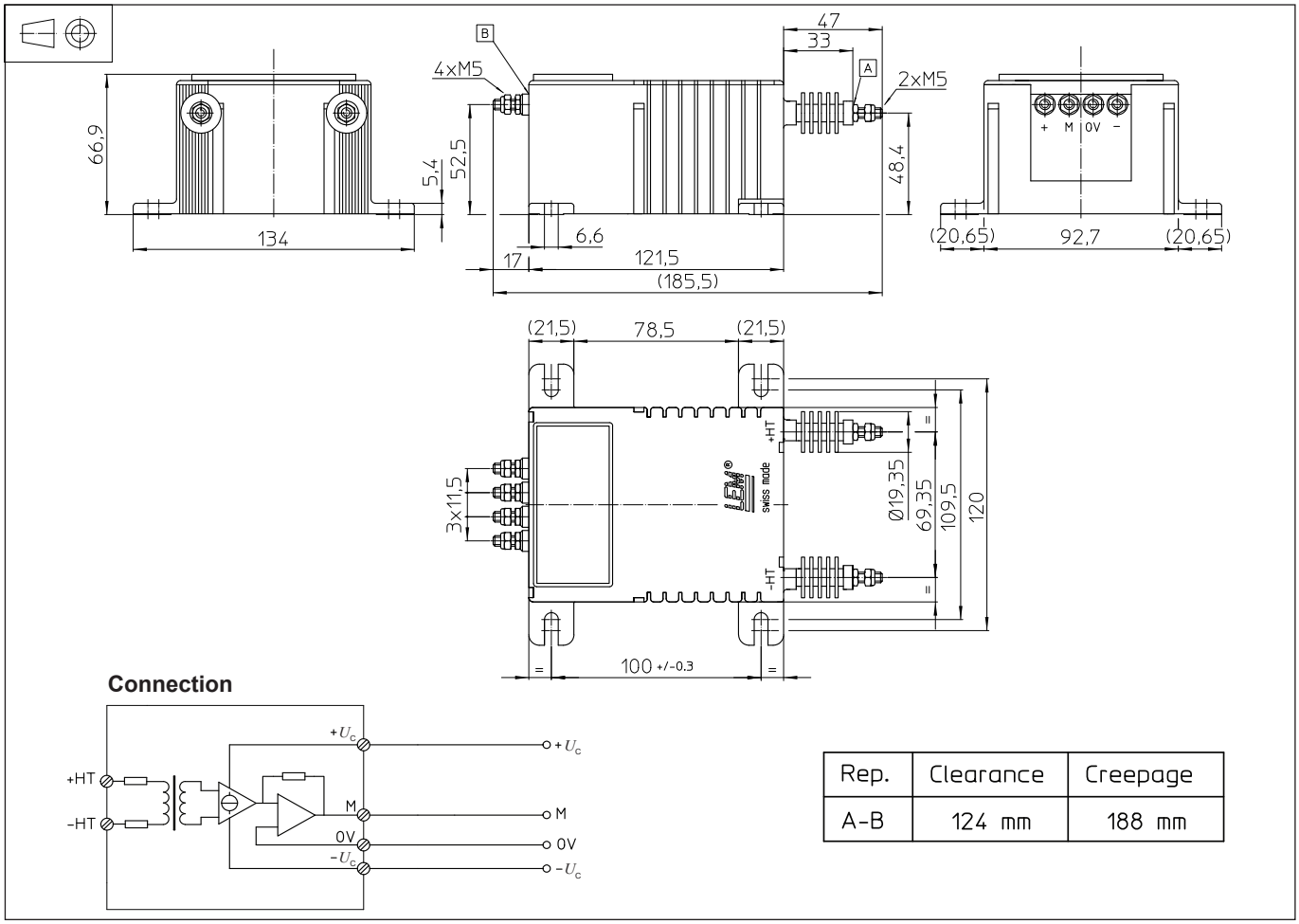
Dimensions CV 4-6000 (in mm)



Connection

Rep.	Clearance	Creepage
A-B	124 mm	188 mm

Mechanical characteristics

- General tolerance ±0.5 mm
- Transducer fastening 4 slots ⌀ 6.5 mm
  4 M6 steel screws
  Recommended fastening torque 5 N·m
- Connection of primary M5 threaded studs
- Connection of secondary M5 threaded studs
  Recommended fastening torque 2.2 N·m

Remarks

- I_S is positive when U_P is applied on terminal +HT.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: https://www.lem.com/en/file/3137/download/
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.

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