Voltage Transducer CV 4-5000/SP3

U_{PN} = 4200 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		4200		V
U_{PM}	Primary voltage, measuring range		0 … ±5000		V
I_{SN}	Secondary nominal RMS current @ U_{PN}		20		mA
N_P/N_S	Turns ratio		4200 V / 20		mA
R_M	Measuring resistance		$R_{M\,min}$	$R_{M\,max}$	
	with ±24 V	@ ±4200 V $_{max}$	50	350	Ω
		@ ±5000 V $_{max}$	50	280	Ω
U_C	Supply voltage (±5 %)		±24		V
I_C	Current consumption		50 + I_S		mA

Accuracy - Dynamic performance data

			Max	
ε_{tot}	Total error @ U_{PN}	T_A = 25 °C	±1.00	%
		−40 °C ... +85 °C	±2.00	%
I_O	Offset current @ U_P = 0, T_A = 25 °C		±0.06	mA
		−40 °C ... +85 °C	±0.10	mA
$t_{D\,90}$	Delay time to 90 % of the final output value for U_{PN} step [1]		≈ 10	µs
BW	Frequency bandwidth (−3 dB) of U_{PN}		DC … 21	kHz

General data

T_A	Ambient operating temperature	−40 … +85	°C
$T_{A\,st}$	Ambient storage temperature	−50 … +85	°C
P_P	Total primary power loss	4.2	W
R_P	Resistance of primary (winding)	4.2	MΩ
m	Mass	≈ 770	g
	Standards [2]	EN 50155: 2007 EN 50121-3-2: 2016	

Notes: [1] For a dv/dt = 1000 V/µs

[2] Deviation of the offset during the test IEC 61000-4-3 between 100 to 200 MHz.

Features

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

Special features

- I_{SN} = 20 mA
- U_C = ±24 (±5 %) V
- T_A = −40 °C … +85 °C
- Shield
- Connection to secondary circuit on shielded cable 3 x 0.5 mm².

Advantages

- Accuracy
- Very good linearity
- Low temperature drift
- Low delay time
- High frequency bandwidth.

Applications

- Single or three phase inverters
- Propulsion and braking choppers
- Propulsion converters
- Auxiliary converters
- Battery chargers
- 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.

Application Domains

- Railway (fixed installations and onboard)
- Industrial.

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50/60 Hz, 1 min	9 [1]	kV
U_t	Partial discharge RMS test voltage (q_m< 10 pC)	3.75	kV
		Min	
d_{Cp}	Creepage distance	185.1	mm
d_{Cl}	Clearance	118.5	mm
CTI	Comparative tracking index (group I)	600	

Notes: [1] Between primary and secondary + shield.

Applications examples

According to IEC 61010-1 standard and following conditions:

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

	IEC 61010-1
d_{Cp}, d_{Cl}, U_{Ni}	Nominal voltage
Basic insulation	1000 V
Reinforced insulation	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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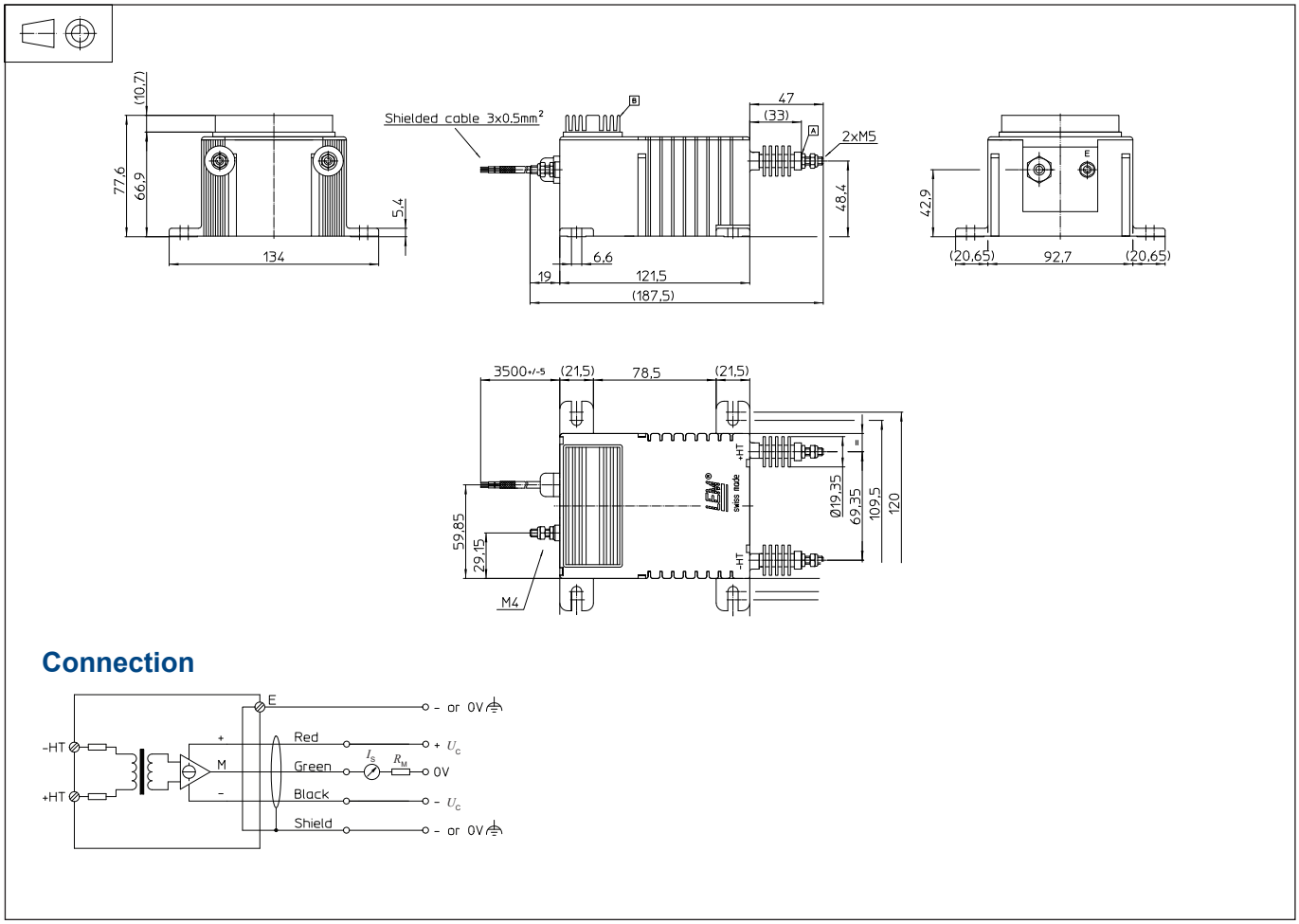
Dimensions CV 4-5000/SP3 (in mm)



Connection

Mechanical characteristics

• General tolerance	±0.5 mm
• Transducer fastening	4 slots ⌀ 6.6 mm 4 steel screws M6
Recommended fastening torque	5 N·m
• Connection of primary	M5 threaded studs
Recommended fastening torque	2.2 N·m
• Connection of secondary	3 × 0.5 mm² shielded cable
• Connection of the shield	M4 threaded studs
Recommended fastening torque	3.2 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/.**

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