Compact precision fluxgate AC/DC current transducer for galvanically isolated measurement 4000 A_{RMS}

Features

- Precision current transducer based on the stable Danisense closed loop flux gate technology
- Ø121mm aperture
- Current measurement accuracy < 0.05%
- Current output
- Sensitivity < 2uA/A
- Primary/secondary ratio 1:5000
- Low offset drift over temperature

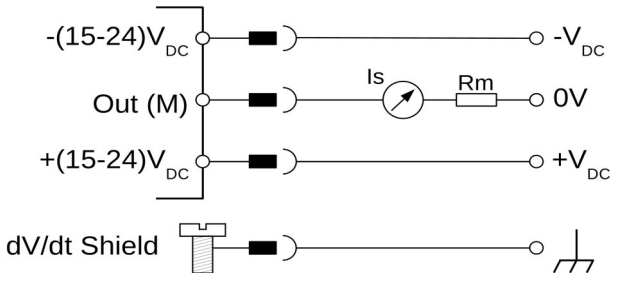
Electrical specifications at Ta=23°C, Vs = ±24 V supply voltage

Parameter	Symbol	Unit	Min	Typ.	Max	Comment
AC current	$I_{PN\ AC}$	A_{RMS}			4000	Vs = ±24V & $R_M \leq 1\Omega$
Nominal primary DC current	I_{PN} DC	A	-4000		4000	Vs = ±24V & $R_M \leq 1\Omega$
Primary current, measurement range	I_{PM}	A	-7000		7000	Vs = ±24V & $R_M \leq 1\Omega$
Current consumption	I_C	mA		100 + I_S		1.25A @ I_{PM}
Nominal secondary current	I_{SN}	A	0.8		0.8	@ I_{PN} DC
Primary / secondary ratio			1:5000		1:5000	$I_{primary}/I_{secondary}$
Measuring resistance	R_M	Ω	0	1		
Linearity error	ε_L	%	0.01			% refers to reading
Bandwidth	f(-3dB)	kHz	100 kHz			
Response time to I_{PN} ramp step signal	µs		0.5			400A/µs @4000A
Temperature variation of I_O, referred to primary	I_{OT}	A	±0.4			-40 … 85 °C; 0.4A @ 0.01%
Offset current, referred to primary	I_O	A	±0.4			-40 … 85 °C; 0.4A @ 0.01%
Magnetic offset current after 3 x I_{PN} Referred to primary	I_{OM}	A	±0.4			-40 … 85 °C; 0.4A @ 0.01%
Sensitivity error	ε_G	%	±0.03			% refers to nominal current
Overall accuracy	ε_{TOT}	%	-0.05		0.05	% refers to nominal current -20 … 85 °C
Power supply voltages		V_{DC}	±14.5		±25.2	
Operating temperature range		°C	-40		85	

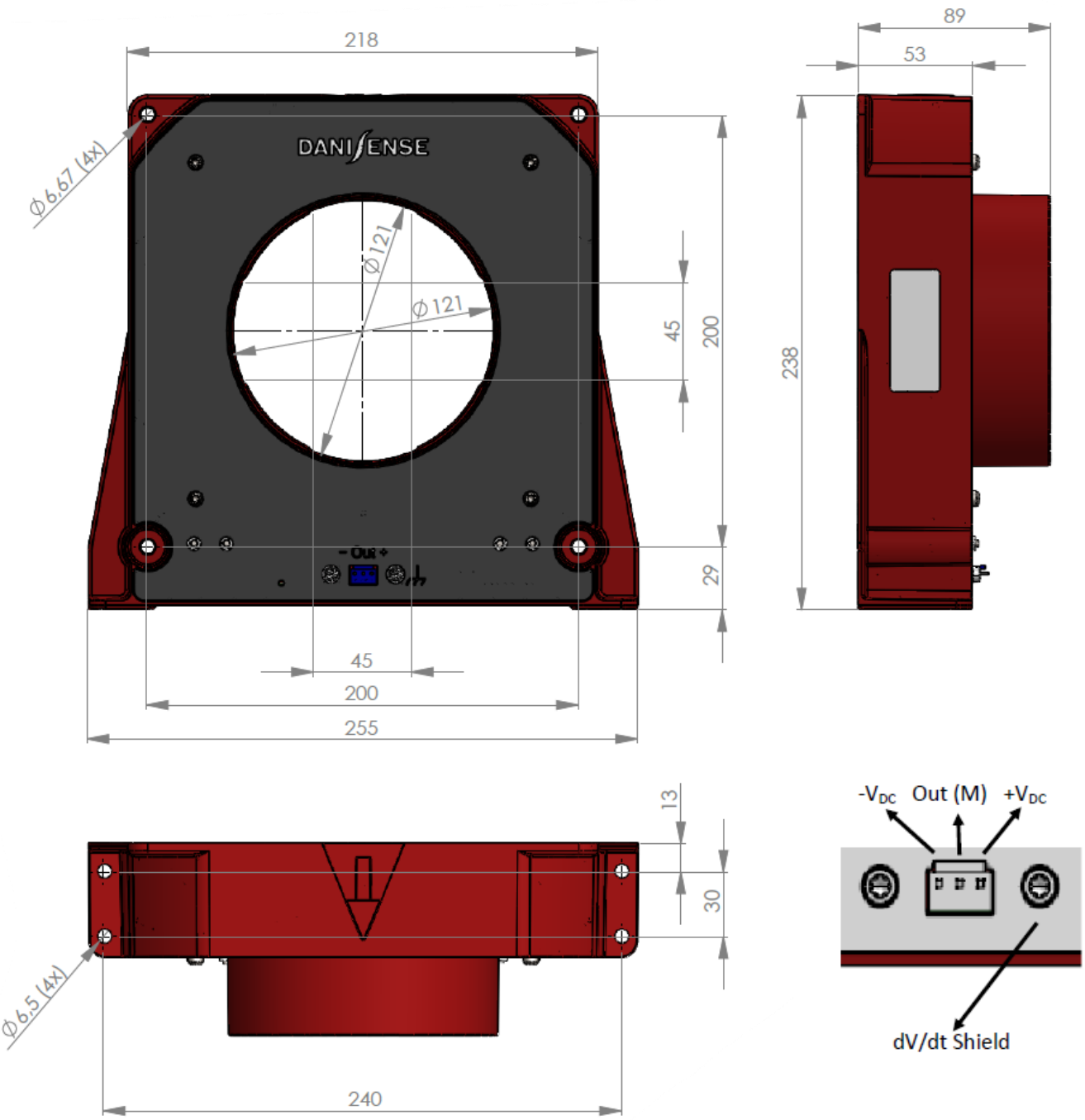
Isolation specifications

Parameter	Uni	Value
Rms voltage for AC isolation test, 50/60 Hz, 1 min - Between primary and (secondary and shield)	kV	6
Partial Discharge extinction voltage rms @ 10pC	kV	2
Impulse withstand voltage 1.2/50us	kV	23
Creepage distance	mm	>38
Clearance distance	mm	>38
Over Voltage Category		OV3
Comparative Tracking Index	CTI	600

Environmental and mechanical characteristics

Parameter	Unit	Min	Typ	Max	Comment
Storage temperature range	°C	-50		90	
Relative humidity	%	20		80	Non-condensing
Mass	kg		4.1		
Pollution degree	PD2				
Case Material	UL94 V-0				
Connections	3 pin: JST-S3P-VH & dV/dt Shield connection 				

Mechanical drawings



Primary current busbar recommendations for optimal performance

- **Center the primary busbar going through the MBC4000I Ø121mm aperture.**
- **At 7000A DC recommended distance is minimum 350mm. Please see drawing below for illustration.**
- **At 4000A DC recommended distance is minimum 200mm. Note linear relation to primary current level: 4000A/7000A * 350mm = 200mm.**

- Sensor position