Insulation coordination

Parameter	Symbol	Unit	Value	Comment
RMS voltage for AC insulation test 50/60 Hz/1 min	U_d	kV	5.4	
Impulse withstand voltage 1.2/50 µs	$\hat{U}_W$	kV	9.6	
Partial discharge test voltage (q_m < 10 pC)	U_t	V	1650	Busbar/secondary. According to: IEC 61800-5-1 IEC 62109-1
Clearance (pri. - sec.)	d_{Cl}	mm	> 10.5	Shortest distance through air
Creepage distance (pri. - sec.)	d_{Cp}	mm	> 10.5	Shortest path along device body
Case material	-	-	V0 according to UL 94	
Comparative tracking index	*CTI*		600	
Application example	-	-	600 V CAT III PD2	Reinforced insulation according to IEC 61800-5-1
Application example	-	-	1000 V CAT III PD2	Basic insulation, non uniform field according to IEC 61800-5-1
Application example	-	-	600 V CAT III PD2	According to UL 508

Environmental and mechanical characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	°C	−40		105	
Ambient storage temperature	T_S	°C	−40		105	
Mass	*m*	g		101		

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At T_A = 25 °C, U_C = +5 V, R_L = 10 kΩ unless otherwise noted (see Min, Max, typ. definition paragraph in page 13).

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal RMS current	I_{PN}	A		100		
Primary current, measuring range	I_{PM}	A	−250		250	2.5 × I_{PN} @ U_C ≥ 4.6 V
Number of primary turns	N_P	-		1		Bus bar
Supply voltage [1]	U_C	V	4.5	5	5.5	
Current consumption	I_C	mA		19	25	
Reference voltage (output)	V_{ref}	V	2.48	2.5	2.52	Internal reference
Reference voltage (input)	V_{ref}	V	0.5		2.65	External reference
Output voltage range @ I_{PM}	$V_{out} - V_{ref}$	V	−2		2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	130	200	300	Series
V_{out} output resistance	R_{out}	Ω		2	5	Series
Allowed capacitive load	C_L	nF	0		6	
Overcurrent detection output on resistance	R_{on}	Ω	70	95	150	Open drain, active low Over operating temperature range
Overcurrent detection hold	t_{hold}	ms	0.7	1	1.4	Additional time after threshold has released
EEPROM control	V_{out}	mV	0		50	V_{out} forced to GND when EEPROM in an error state [2]
Electrical offset voltage @ I_P = 0 A	V_{OE}	mV	−5		5	$V_{out} - V_{ref}$ @ V_{ref} = 2.5 V
Electrical offset current Referred to primary	I_{OE}	A	−0.625		0.625	
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	−170		170	−40 °C … 105 °C
Temperature coefficient of V_{OE}	TCV_{OE}	mV/K	−0.075		0.075	−40 °C … 105 °C
Temperature coefficient of I_{OE} @ I_P = 0 A	TCI_{OE}	mA/K	−9.375		9.375	−40 °C … 105 °C
Theoretical sensitivity	G_{th}	mV/A		8		800 mV @ I_{PN}
Sensitivity error @ I_{PN}	ε_G	%	−0.5		0.5	Factory adjustment
Temperature coefficient of G	TCG	ppm/K	−250		250	−40 °C … 105 °C
Linearity error 0 … I_{PN}	ε_L	% of I_{PN}	−0.75		0.75	
Linearity error 0 … I_{PM}	ε_L	% of I_{PM}	−0.5		0.5	
Magnetic offset current (@ 10 × I_{PN}) referred to primary	I_{OM}	A	−1.27		1.27	One turn
Reaction time @ 10 % of I_{PN}	t_{ra}	µs		3	3.5	@ 100 A/µs
Response time @ 90 % of I_{PN}	t_r	µs		3	3.5	@ 100 A/µs
Frequency bandwidth (−3 dB)	BW	kHz		180		Small signal
Output RMS noise voltage spectral density 100 Hz … 100 kHz	e_{no}	µV/√Hz		8.3		
Output RMS noise voltage (DC … 10 kHz) (DC … 100 kHz) (DC … 1 MHz)	V_{no}	mVpp		4.6 8.6 14.4		
Primary current, detection threshold	I_{PTh}	A	2.64 × I_{PN}	2.93 × I_{PN}	3.22 × I_{PN}	Peak value ±10 %, overcurrent detection OCD
Accuracy @ I_{PN}	X	% of I_{PN}	−1.25		1.25	
Accuracy @ I_{PN} @ T_A = +105 °C	X	% of I_{PN}	−4		4	See formula note [3]
Accuracy @ I_{PN} @ T_A = +85 °C	X	% of I_{PN}	−3.3		3.3	See formula note [3]

Notes: [1] 3.3 V SP version available
[2] EEPROM in an error state makes the transducer behave like a reverse current saturation. Use of the OCD may help to differentiate the two cases
[3] Accuracy @ T_A (% of I_{PN}) = $X + \left(\frac{TCG}{10000} \times (T_A - 25) + \frac{TCI_{OE}}{1000 \times I_{PN}} \times 100 \times (T_A - 25)\right)$.